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A Balancing Act: Analyzing the Effects of Embedded versus Isolated Self-Regulation Breathing Techniques on Inattention and Phonemic Segmentation Skill Acquisition in Kindergartners

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A Balancing Act:

**Analyzing the Effects of Embedded versus Isolated Self-Regulation Breathing Techniques on
Inattention and Phonemic Segmentation Skill Acquisition in Kindergartners**

Kimberly Ann Atkinson

A DISSERTATION

In the

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Abstract

Using a mixed-methods convergent design within an Improvement Science framework, this Improvement Science Dissertation in Practice analyzed the effects of embedding self-regulation breathing techniques into the phonemic segmentation lesson versus conducting the techniques prior to the lesson or not at all. The project was conducted across two elementary schools, using six kindergarten educators and classes. The research began with a pre-assessment, followed by two days of applying or withholding the intervention across three groups (no intervention, isolated intervention, embedded intervention), and concluded with a post-assessment. The researcher conducted the academic lessons while the educators conducted inattention behavioral observations. After each lesson, debriefing interviews were conducted. One week later, the researcher conducted a final interview. The quantitative

data (assessments and observations) informed the qualitative data (interviews) to determine outcomes. The data revealed statistically significant changes across all groups' academic scores. However, qualitative data suggested that this improvement may have been due to unintended variables such as mindfulness tools and the instructional model. Additionally, the data revealed no statistical significances in inattention for the no intervention group, approaching significance in two inattention categories in the isolated intervention group, and statistical significance in one inattention category for the embedded intervention group, thereby supporting the working theory that using self-regulation strategies may be helpful in improving inattention and thus equitable learning access then not using any at all. The study also revealed an overwhelming need to support educators with further training in an on-going coaching model to allow for more impactful SEL integration practices.

Keywords: mixed-methods, improvement science, breathing techniques, self-regulation, Kindergarten, phonemic segmentation, mindfulness, social-emotional learning

Dedication

I dedicate this dissertation to my sister, Jennifer Lynn Van Wart. Her entire life has been one fight after another in a constant battle to overcome challenges that life threw her way. One role of an older sibling is to teach the younger ones. My older sister has done that for me in so many ways. This year, 2022, despite her own terminal brain cancer battle, she continues to teach me. She teaches me perseverance in the face of adversity, a positive outlook, and a “never give up” attitude. It doesn’t mean she doesn’t have difficult days; it just means that she has taught me how to rise up to those days, rest and renew when I need to, and then try again. That is exactly what doing this doctorate has been for me. I dedicate this dissertation to someone who has encouraged me to keep going, even when the challenges overwhelmed me. For this I am eternally grateful and inspired by her. I hope to use this doctoral degree to pursue even more ways of helping others, thereby exemplifying her own legacy as well.

Acknowledgements

This dissertation is the culmination of three years of doctoral studies and many years of mindfulness practices in an effort to aid my students and colleagues in balancing their social-emotional and academic needs. However, I could not have accomplished what I have without the constant support of family, friends, and colleagues. I would like to first thank my husband, Jimmy, for always encouraging me and being flexible with the ever-changing “new norms” of our lives to allow me time and space to do this work. I would also like to thank my friend and colleague, James, who has believed in me and put up with my “relentless” pursuit of doing better to help those around me. I would like to thank Dr. Title for giving me the opportunity to improve myself through acceptance of me into this program. I wish to thank Dr. Alfano for not only dreaming up this program, but also seeing it to fruition. I would also like to thank ALL my professors in this program who made me feel like a colleague, learning and growing in the fields of educational leadership and social-emotional learning. I would like to thank my second reader, Dr. Morgan, for bringing his SEL expertise to the table and a smile to our faces. I would especially like to say thank you to Dr. Marmo, my chairperson, for giving me the tools, individual attention, and constant encouragement necessary to accomplish this goal successfully. I would like to thank our Cohort #1, who stuck alongside each other as pioneers of this program. I would also like to thank my family and friends for putting up with my constant re-scheduling needs and daily exhaustion. I would like to thank the colleagues of my school and district for welcoming me as I practice this good work with our students, staff, and families. Finally, and most importantly, I would like to thank my Lord Jesus Christ. He set me out on this mission, and He has provided the people and wisdom necessary to be successful with it. I look forward to seeing where He takes me next as a result of it!

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Chapter 1: The Problem of Practice

As a result of increasing inattention among some students who struggle to self-regulate their bodies, a growing problem in education today is a readiness to access learning. Social and environmental factors such as trauma and poverty often contribute to decreased learning readiness in communities with higher numbers of students impacted by Adverse Childhood Experiences (ACEs) (Bettencourt, et al., 2017). Furthermore, children who experience ACEs tend to be at a higher risk for increased difficulty in self-regulation and overall learning access (Romero et al., 2018). While the decreased ability to be socially and behaviorally ready to access learning because of ACEs may affect productivity in all subject areas, it may also be a contributing factor in recently decreased literacy scores, increased risks of retention, requiring individualized educational services, behavioral problems, and increased inattention (McKelvey et al., 2018). Various socio-economic groups repeatedly affected by ACEs often reflect the disparities seen across academic outcomes. These societal disparities, also referred to as the achievement gap, may be avoidable. Providing students with self-regulation tools to get their bodies and minds ready to access their learning could contribute to addressing this growing problem of practice. This Improvement Science Dissertation in Practice (ISDiP) study sought to analyze the effects of embedded versus isolated self-regulation strategies, specifically breathing techniques, and their impact on accessing literacy learning, specifically the phonemic segmentation skill, for kindergartners.

Background of the Problem

Increased inattention and decreased literacy skills are growing problems across the nation. Reading proficiency affords opportunities for continuous learning, enjoyment, and future success. Low proficiency in reading can contribute to a wider achievement gap and impede overall societal progress. Literacy scores have shown minimal improvement in a 30-year time span nationally (The Nation's

Report Card [NRC], 2021). Most recently, average reading scores in 2019 were lower than in 2017 for both Grade 4 and Grade 8 students. Fourth grade literacy scores in 34% of states (n=17) decreased and eighth grade literacy scores in 62% of states (n=31) decreased with only 2% of states (n=1) increasing literacy scores in either grade (NRC, 2021). At approximately the same time, a surge in behavioral problems including, but not limited to, inattention and hyperactivity, diagnosed as Attention-Deficit / Hyperactivity Disorder (ADHD), has increased from 4.4 million students across the nation in 2003 to 6.1 million students in 2016 (Center for Disease Control and Prevention [CDCP], 2021). Additional research verifies these findings noting an increase from 6.1% to 10.2% ADHD diagnoses over the last two decades as taken from a representative sampling of children and adults across the United States (Xu et al., 2018). Furthermore, the *Journal of Translational Pediatrics* validates this growing problem as they define ADHD as a complex, neurodevelopmental disorder that typically begins in childhood and can continue into adulthood, and which can negatively impact a person's social, academic, and occupational functioning (Cabral et al., 2020). Although the problems of decreasing literacy scores and increasing inattention may have their own unique set of root causes, recent research has illuminated a correlation between the two problems and suggest innovative intervention research to address these areas for improvement (Cruz et al., 2019; Garwood et al., 2017; Ogg et al., 2016).

Various root causes may contribute to the decrease of literacy scores and the increase of inattention. Lack of evidenced-based curricular changes and materials as well as disagreements about how reading should be taught (i.e., "The Reading Wars") have plagued literacy education across the nation since the 1990's (Shanahan, 2005). Furthermore, Attention Deficit Hyperactivity Disorder (ADHD), although more readily diagnosed now than in years past, currently has no established or agreed upon consensus related to causes or risk factors (CDCP, 2021). Described as a neurodevelopmental disorder with no clear cause, the mitigation of ADHD symptoms has suggestions of

improvement but not suggestions for adjusting educational practice to better meet the needs of this population (CDCP, 2021). Research further verifies the on-going challenge of both diagnosing and treating the symptoms associated with ADHD (Brahmbhatt et al., 2016). Educational reforms continue to try to address the challenges associated with both non-developmental inattention and literacy skill acquisition for students.

Changes in education have attempted to remedy the problems of decreased literacy and increased inattention. In terms of literacy, to provide a more systematic approach to literacy learning, evidence supports a focus on learning how to read through the creation of more structured literacy instructional practices (Dehaene, 2009). Additionally, a shifting mindset towards using more content-rich literature materials has shown promising improvements for building background knowledge and overall reading comprehension (Wexler, 2019). In terms of self-regulation, an awareness of the positive effects of using self-regulation techniques to reset the pre-frontal cortex, or area of the brain in charge of accessing learning, continues to increase (Gibbs, 2017). Additionally, information pertaining to social-emotional learning (SEL), which umbrellas self-regulation under the SEL competency of self-management (CASEL, 2021), continues to emerge indicating the powerful effects of using SEL for not only trauma healing but also for improved overall outcomes when addressed alongside all academics, including literacy (NCSEAD, 2021). Despite this progress, the field of education needs additional instructional changes to continue to address the problem of increasing inattention in students and its impact on literacy learning access. As both problems are equally important factors towards mitigating disparities in achievement, educators need more information about the best way to address both problems simultaneously.

Although sometimes seen as separate issues, there is a connection between these two educational challenges. A meta-analysis of associated research shows that self-regulation abilities relate to academic

outcomes (Allan et al., 2014). Additionally, students who self-regulate are more engaged in their academics (Blair & Raver, 2014). This connection transcends subject area as well. Studies have shown the positive correlation between students' abilities to self-regulate and improved math and science skills (Coldren, 2013; McClelland et al., 2007). While studies have also shown this same correlation in the broader area of literacy, evidence exists of this relationship in specific literacy areas as well (Cruz et al., 2019; Sims & Lonigan, 2013). Self-regulation, as a subset of executive functioning skills, can predict reading comprehension outcomes (Chang, 2020). Self-regulation can aid in the acquisition of content vocabulary (Kim & Linan-Thompson, 2013). Focused attention can predict word reading skills (Saez et al., 2012) and early writing skills can improve when students are self-regulated (Puranik et al., 2017). Helping students to self-regulate can help students to access their learning better, thereby improving academic outcomes in all subject areas.

Improved self-regulation, in addition to impacting a variety of subject areas, also impacts students of different backgrounds. Moreover, using self-regulation techniques is particularly helpful with populations of students who enter formal education with academic deficiencies. Self-regulation can positively impact academic outcomes "independent of general intelligence" (Blair & Razza, 2007, p. 647). This finding addresses the issue of different students learning from different starting points. Caughy et al., (2018) further reflect this in their study of low-income, ethnically minoritized students from urban schools, which found a correlation between self-regulation and positive math and reading outcomes. Another underserved population of students, English Language Learners (ELL), could also benefit from establishing self-regulation in their early years. The outcomes of Finders et al., (2019), illustrated a relationship between reduced executive functioning abilities of students in kindergarten as significantly related to the achievement gaps found in the same students in third grade. While learning access can be a problem for many underrepresented students, the evidence supports the use of self-

regulation as a viable tool for improving equitable access of learning for all students, inclusive of students' diverse learning needs and socio-economic levels. Furthermore, the enhancement of self-regulation can improve learning access in the early grades, which may also contribute to improving educational outcomes and may have the potential to disrupt cycles of intergenerational poverty (Heckman, 2021) through reduction of the achievement gap and improvement in equity. With literacy being the foundation of all other learning, this ISDiP study aimed to use self-regulation as a tool to help students access early literacy skills, which are the foundation of reading. The research also sought to understand how best to use self-regulation strategies to improve learning access.

This ISDiP study took place across two schools in the district of Shelton, Connecticut. Located in the Lower Naugatuck Valley, Shelton is a suburban town with five elementary schools, one Grade 5-6 school, one middle school, and one high school. The town ranges in socio-economic status and backgrounds and the student population reflects this mixture. Based on 2018 enrollment data, the Shelton Public School System serviced 4.9% English Language Learners, 14.6% students with disabilities, and 29.4% free or reduced lunch students (CSDE, 2020). The two focus school sites: Elizabeth Shelton Elementary School (ESS) and Long Hill School (LHS) reflect a diverse population as well. In 2018, ESS served 6% English Language Learners, 9% students with disabilities, and 28% free or reduced lunch students (CSDE, 2020). Comparably, LHS served 13% English Language Learners, 12% students with disabilities, and 46% free or reduced lunch students (CSDE, 2020). With such a broad range amongst the student populations of both schools, this ISDiP project had the potential to address a larger diversity of students learning access needs.

Recent district academic data has reflected problems with literacy learning as well. Based on standardized assessment scores, in 2018, the district's English Language Arts Performance Index decreased from the year prior (CSDE, 2020). Reflecting the study school-sites specifically, ESS

decreased from an index rate of 82.6 in 2017 to 77.2 in 2018 and LHS decreased from an index rate of 77.1 in 2017 to 75.7 in 2018 (CSDE, 2020). This information is consistent with the decrease in literacy scores observed across the nation. Furthermore, an increase in inattention, among other skills, of kindergarten students across the state is also evident. Connecticut educators teaching kindergarten complete the Connecticut State Kindergarten Entrance Inventory at the start of each kindergarten school year to reflect a student's beginning placement in six domains: (a) physical motor proficiency, (b) personal social proficiency, (c) numeracy proficiency, (d) literacy proficiency, (e) language proficiency, and (f) creative/aesthetic proficiency (KEI Handbook, 2020). Educators rank students as Level 3 (needing minimal support), Level 2 (needing some support), and Level 1 (needing a large degree of support) at the start of the school year (KEI Handbook, 2020). Data across three years (see Table A) showed a decrease in the number of Level 3 students across all six domains (KEI Results, 2014-2017).

Table A

Level 3 (Needing Minimal Support) Kindergarten Students – Ranked at the Start of School Year

	2014-2015	2015-2016	2016-2017
Physical Motor	38.7%	23.5%	22.1%
Personal Social	27.4%	25.4%	19.3%
Numeracy	32.7%	25.7%	22.4%
Literacy	33%	24.8%	21.6%
Language	30.8%	25.7%	18.1%
Creative/Aesthetic	36.5%	25.4%	23%

**Data Adapted from the Connecticut State Kindergarten Entrance Inventory, 2014-2017*

Specifically, in the domain of personal social proficiency, which reflects general behavioral data, an increase in Level 1 students was apparent moving from 17% in 2015 to 19.5% in 2016 and jumping to 27.3% in 2017. District students mirror the data seen across the state and there are several factors that

contribute to the decreasing literacy scores and increasing inattention among these students, which hinder them from meeting district goals.

Without mitigating these problems throughout the district, students will not meet the goals of the system. The district touts a vision that prepares students to be successful global citizens, a mission that provides students with a safe learning environment, and a belief statement that offers high quality staff and instructional programs while engaging learners and stakeholders (Shelton Public Schools, 2020). With literacy curriculum that does not currently meet all students' needs, as well as students who may struggle to access academics due to a need for on-going self-regulation, it may be challenging for students to meet the goals of the system.

The specific aim of this ISDiP study was to evaluate the impact of teaching self-regulation to improve literacy learning. This ISDiP study used the framework of Improvement Science to analyze the problem of inattention, to address the problem with an intervention, and seek out better educational practices to improve the problem as a result (Hinnant-Crawford, 2020).

Statement and Definition of the Problem

This ISDiP study addressed the problem of inattention effects on learning readiness. In addressing this problem, the study explored whether it was more impactful to embed self-regulation techniques directly into an academic lesson or conduct them in isolation, prior to conducting an academic lesson. While research within the past ten years supports using self-regulation to help students access their learning and improve academic outcomes, most of this research focuses on using self-regulation techniques prior to the academic lesson to get oneself ready for learning access (Allan et al., 2014; Caughy et al., 2018; Chang, 2019; Coldren, 2013; Cruz et al., 2019; Finders et al., 2019; Kim & Linan-Thompson, 2013; Puranik et al., 2017; Saez et al., 2012; Sims & Lonigan, 2013). However, a few

studies support an even greater impact when educators integrate various social emotional skills, including self-regulation, directly into the academic lesson (Daunic et al., 2013; Jones et al., 2011; Van de Sande et al., 2018). This ISDiP project aimed to analyze the effects of embedded versus isolated self-regulation strategies, specifically breathing techniques, on literacy skills, specifically phonemic segmentation skill acquisition for kindergartners. The outcomes from this study illuminated best SEL and academic integration practices to support greater learning access for all students.

Social emotional learning (SEL) plays an important role in a student's learning and overall well-being. While sometimes called *Character Education* or *21st Century skills*, SEL encompasses various skills that engage and motivate students in their learning as well as providing the skills necessary to be successfully productive adults later in life. The Collaborative for Academic, Social, and Emotional Learning (CASEL) defines SEL as “an integral part of education and human development” (CASEL, 2021) outlining five core SEL competencies that drive the process of that development: (a) *self-awareness*, (b) *self-management*, (c) *social awareness*, (d) *relationship skills*, and (e) *responsible decision making*. Although self-regulation connects to all five domains, it is most strongly associated with self-management, self-awareness, and responsible decision making (Durlak et al., 2015). Furthermore, while SEL strategies to promote these domains are abundant and can vary greatly, the strategy of self-regulation is very impactful on the cognitive learning center of the brain (Gibbs, 2017). Blair and Raver (2015) define self-regulation as a “neurobiological theory” which is “a biobehavioral system in which attention and emotional responses to stimulation are organized... to facilitate the reflective, goal-directed cognitive processes...” (p. 66). Inattention, due to various factors including but not limited to trauma or ACEs, negatively impacts a student's prefrontal cortex, or learning center of the brain, placing it in a constant state of survival mode (MAC, 2005). This keeps the student in a constant state of stress and unable to cognitively attend to the academic requirements of a classroom. Self-

regulation is a tool to help these students heal from this stress and position their mind back in readiness to access their learning (Gibbs, 2017).

This study sought to analyze the powerful impact self-regulation had upon literacy learning, specifically. While there is a plethora of early literacy skills to apply the self-regulation intervention to, the researcher chose the phonemic segmentation as an important prerequisite skill necessary to learning how to decode or read simple consonant, vowel, consonant (CVC) beginner words. Phonemic segmentation is the act of separating the individual sounds in the word to understand the make-up of the word. Sounding out the individual letter sounds of a word helps the reader to both read and spell the word. Phonemic segmentation is an imperative skill to address as a core foundational literacy skill.

With a concentration on self-regulation and phonemic segmentation, this ISDiP project focused on an “actionable problem of practice from an improvement science perspective” thereby rendering the problem as urgent, strategic, feasible, and linked to specific actionable instructional practices (Perry et al., 2020, p.56). Intentionally conducting this study in late January placed kindergarten students strategically within the segmenting and blending portion of their phonics instruction, per the district’s academic pacing guide. The project was feasible in that no new learning needed to take place to carry out the intervention and the self-regulation techniques were breathing techniques, which are a zero-cost learning intervention. The intervention required a knowledge of the various breathing techniques, but this was easily obtainable and teachable. The knowledge of the phonemic segmentation skill was already a part of the regular academic curriculum and therefore required no additional training. The outcomes illuminated best SEL and academic integration practices for other educators to apply to other subject areas and age groups. Additionally, the integration of SEL and academics is one of the key indicators of successful SEL implementation for schools and districts per the CASEL’s schoolwide SEL implementation guide (CASEL, 2021), which could lead to actionable curricular and policy changes.

Currently, very few academic curricular programs have SEL competencies aligned to the core academic standards. Outcomes of this study could guide that alignment and suggest a low-cost and easy to implement intervention to improve educational practice. Furthermore, the achievement gap continues to grow with an avoidable disparity for underrepresented populations, both in school and in adulthood, creating an urgency to improve this problem now. Using SEL, and specifically self-regulation, could give these students the extra tools needed to better access their learning and begin to address the disparity, moving towards closing the achievement gap. Based on a recent Legislative Research Report (Callahan, 2019), Connecticut's achievement gap continues to show "significant disparities" in the performance indexes of racial groups, high-need groups, and non-high-needs groups (p.1). As such, educators have an obligation to determine best instructional practices for more equitable learning access.

When defining any problem of practice, the improvement science framework seeks input from those closest to the problem to allow for outcomes to be user-centered (Hinnant-Crawford, 2020). As such, this ISDiP researcher conducted an anonymous electronic empathy interview survey at the focus school-sites (ESS and LHS) to gather user-centered data aimed at validating the problem of practice. Defined as an organic process of collecting stakeholders' experiences to gain further insight into the problem of practice, empathy interviews are "a data collection strategy that seeks to understand some concept or experience from the perspective of the interviewee" (Hinnant-Crawford, 2020, p.59). Ten open-ended questions (see Appendix A) yielded several qualitative themes supporting the growing problem of inattention in kindergartners and its relation to literacy learning access (see Table B). While the themes revealed the negative impact inattention had on both literacy learning access and overall well-being, it was also clear from the data that skill acquisition and attention go hand in hand. In addition to these data, three questions reflected the impact of student inattention on the end-users themselves. With an average teaching experience of eight years, the participants of the survey expressed

experience in having tried several self-regulation strategies to combat the problem of inattention effects on learning access. However, of the strategies noted, end-users conducted 66% in isolation prior to the start of the academic lesson, mostly in the form of breaks between subjects. Furthermore, these educators felt that the changes in both inattention and literacy over the past five years have led to additional personal stress and time, both in and out of the school day. Educators also indicated a need to address these problems in the classroom with the added challenge of having few resources to do so. Participants felt that any expertise they have acquired to address these problems has been self-taught and all end-users felt a strong need to have additional professional learning opportunities to build their confidence in improving their impact in these areas and increasing overall learning access.

Table B*Empathy Interview Data Collection Themes and Supporting Evidence*

Theme	Sample Quotes
Theme #1: Inattention Hinders Learning Access	“Inattention is a main reason why some students are not picking up the curriculum the way we want/need them to. Most students are capable of learning the material and understanding it, but their lack of focus on a lesson/task can greatly inhibit their learning.”
Theme #2: Competition with more Engaging Outside Influences	“Students who aren’t engaged, aren’t retaining the information necessary for foundational learning.” “I think kids today have access to so much more than kids did 5, 10, 20 years ago. At home, many students have lots of toys, games, books, tablets, tv’s, video games, etc. They are able to quickly move on to a different activity, video, tv show, game, once they are bored with the first one. As teachers we have to compete with all of that and try to be MORE engaging to hold their attention. It is not an easy task!”
Theme #3: Home/Upbringing Influences	“Both parents working and children are in day care before school and after school leaving them with a lack of individual attention and support, lack of sleep, lack of home routines, single parent households.”
Theme #4: Need for Additional Educator Training	“I strongly believe that parent involvement and support makes a huge difference in literacy success at this age. Parents who are consistently reading with their children, helping their child complete any assignments sent home, and remaining in close contact with the teachers, are really helping to set their child up for success.” “I have not had district training on addressing inattention in kindergarten, However, I have sought out my own training on various kindergarten topics through online webinars and PL which has helped me gain knowledge and new ideas in this area.”
Theme #5: Isolated vs. Embedded Strategy Use	“I feel as if I know strategies and supports for teachers and parents to work on inattention. I feel we need to come up with common language aligned with our SEL curriculum to have our teachers and parents aware of to use in their everyday language.” “Isolated: positive reinforcement, clip chart, specialized classroom seating placement, personalized behavior charts, ticket rewards that get added to a weekly raffle, hugging a stuffed animal if upset, hugs, allowing the child to feel heard and express themselves, letting children know it’s okay to cry and feel heart, breathing through uncomfortable feelings, feelings check in, calm down area to recollect themselves, grab a drink, use the bathroom, take a quick break.” “Differentiated instruction with more kinesthetic involvement (embedded). Movement breaks or mind breaks (before).” “Some SEL strategies I have tried are brain breaks, sensory breaks, calm corner, and kids’ yoga and mindful breathing, these are activities that would take place either before/after a lesson, or in the middle if I noticed the students needed a break.”

The outcomes of this data validated current experiences related to inattention and its effect on literacy learning access. This data reflected end-user experiences from the ISDiP school-sites but did not coincide with the long-range improvement plans of the district. According to the district’s “Vision of a Graduate,” students will “grow into capable adults, confident and well prepared to adapt to and thrive in

the rapidly changing global society” (Shelton Public Schools, 2021) if they have capacity in critical thinking and problem solving, creativity and innovation, flexibility and adaptability, collaboration, and empathy. Pathways towards building capacity in these crucial life skills begins in preschool in the district. However, when inattention hinders learning access, it is like placing a blockade on the path towards future success. Determining best instructional strategies to address inattention could help remove learning access barriers for students.

To begin to remove these barriers, the district started initiatives focused on students’ and staff SEL. In 2021, the district hosted two professional learning (PL) opportunities for staff regarding new SEL tools. The first PL explained how to use the district created SEL lessons at the start of the school year, made specifically to lay common foundational knowledge of SEL and SEL competencies and create a common SEL language across the district. The second PL focused on the use of the Panorama electronic survey results and playbook, which serve as a resource for SEL activities. Additionally, the district purchased and hosted training sessions in the use of the Frieda B. literature series, which promotes SEL competencies and character development as well as fine-tuning previously existing SEL programming such as the use of Positive Behavior Supports and the Second Step SEL program. Although these actions are moving the district in the right direction towards full SEL implementation, the district still has more work to do. Currently, educators conduct the SEL lessons and activities from these initiatives in isolation. They set aside a small block of time to conduct a lesson or activity. Then they resume academic teaching, with possible referencing of SEL competencies throughout the academic lesson, but nothing intentionally planned.

The outcome of this ISDiP project could provide the district with a framework for intentionally embedding SEL strategies directly into academic lessons and enhancing learning access for more students. While this ISDiP project focused on a single intervention, breathing techniques for self-

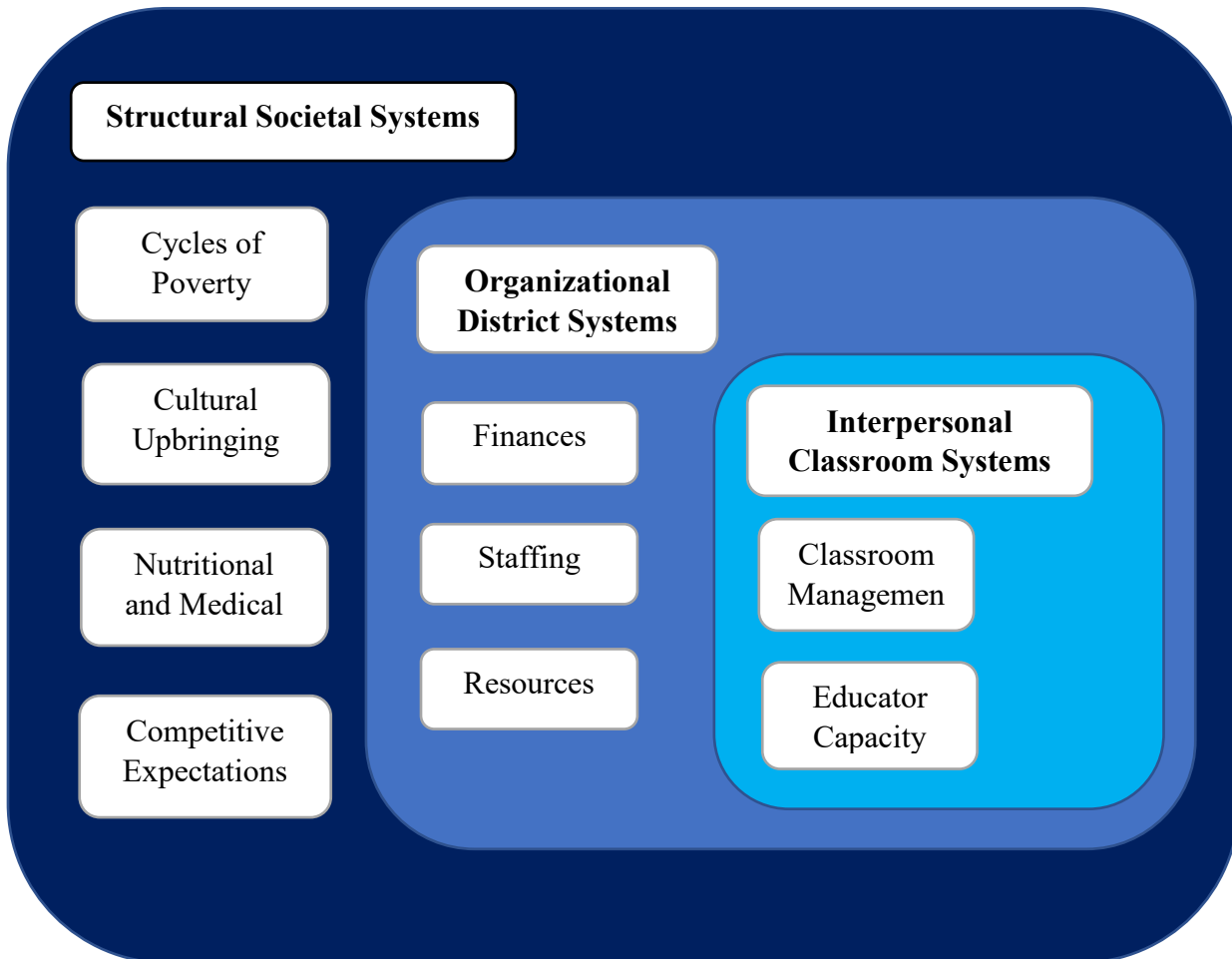
regulation, a single academic focus, phonemic segmentation skills, and a single grade, kindergarten, the project could lay the foundation for other grades to embed other SEL interventions into other academic subjects using the improvement science model of “plan, do, study, act” (Bryk et al., 2017, p.126). The district could support grade level teams who collaborate through Network Improvement Communities, “enabling more productive collective action” (Bryk et al., 2017, p. 142), with the end goal of securing a toolbox of SEL strategies that can be embedded into academics, thereby balancing a students social, emotional, and academic learning, placing their bodies and minds in the best position to access learning, no matter their starting academic or socio-economic backgrounds. This ISDiP could fuel future improvement projects for the benefit of all involved. These projects could lead to positive improvement change in the larger educational system as well.

The Setting and the System

A larger educational system influences the decisions of this district. To make positive improvements in the district system, it is important to understand the larger system at play first. In the Improvement Science framework, Hinnant-Crawford (2020) explains that “When it comes to understanding problems of practice, a telephoto lens alone will not allow you to see the necessary information to make decisions about how to improve. A wide-angle lens is a necessity- because you need to see with clarity the entire system that produces the results” (p.93). Three levels of systems could contribute to the problem of increased inattention and its negative effects on learning access (see Figure 1.1).

Figure 1.1

Systems of Influence on Inattention and Learning Access



Systems of structure, organization, and interpersonal could factor into the problem of increased student inattention hindering learning access. On the macro level, structural societal systems such as cycles of poverty, cultural upbringing, nutritional and medical access, and competitive expectations could impact inattention and learning access. On the micro level, organizational district systems such as finances, staffing, and resources could influence protocols in place that could lead to inattention and reduced learning access in students. On a nano level, interpersonal classroom systems such as classroom management and educator capacity could affect students' inattention and learning access. Recognizing

how each of these systems influences the problem is vital to realizing feasible ways to improve upon the problem.

As a scholarly practitioner, it is not realistic to address societal influences with a single ISDiP project. Furthermore, this researcher's current role as a classroom teacher impedes the feasibility of addressing the organizational systems of the district. However, seeking to improve the problem of inattention and learning access by focusing on the interpersonal classroom systems is a potential strategy for improvement of practice. This ISDiP project was a part of the whole educational system (Hinnant-Crawford, 2020) and although the project addressed only a part of the problem, it is important to recognize how outcomes of the project could influence the larger systems as well. Using the SEL self-regulation breathing techniques as an intervention could improve the system of classroom management. Collaborating alongside educators to explore whether the intervention is more impactful embedded into the academic lesson or conducted in isolation prior to the lesson could influence the system of educator capacity. Not only could the outcomes of this ISDiP improve the problem of inattention and learning access but outcomes could also lead to influencing the larger organizational system in terms of resources and instructional protocols. Understanding how various levels of systems relate to each other is one way to better understand the problem of practice but another way to further deepen knowledge of the roots of the problem is to look more closely at the root causes that may be affecting the problem.

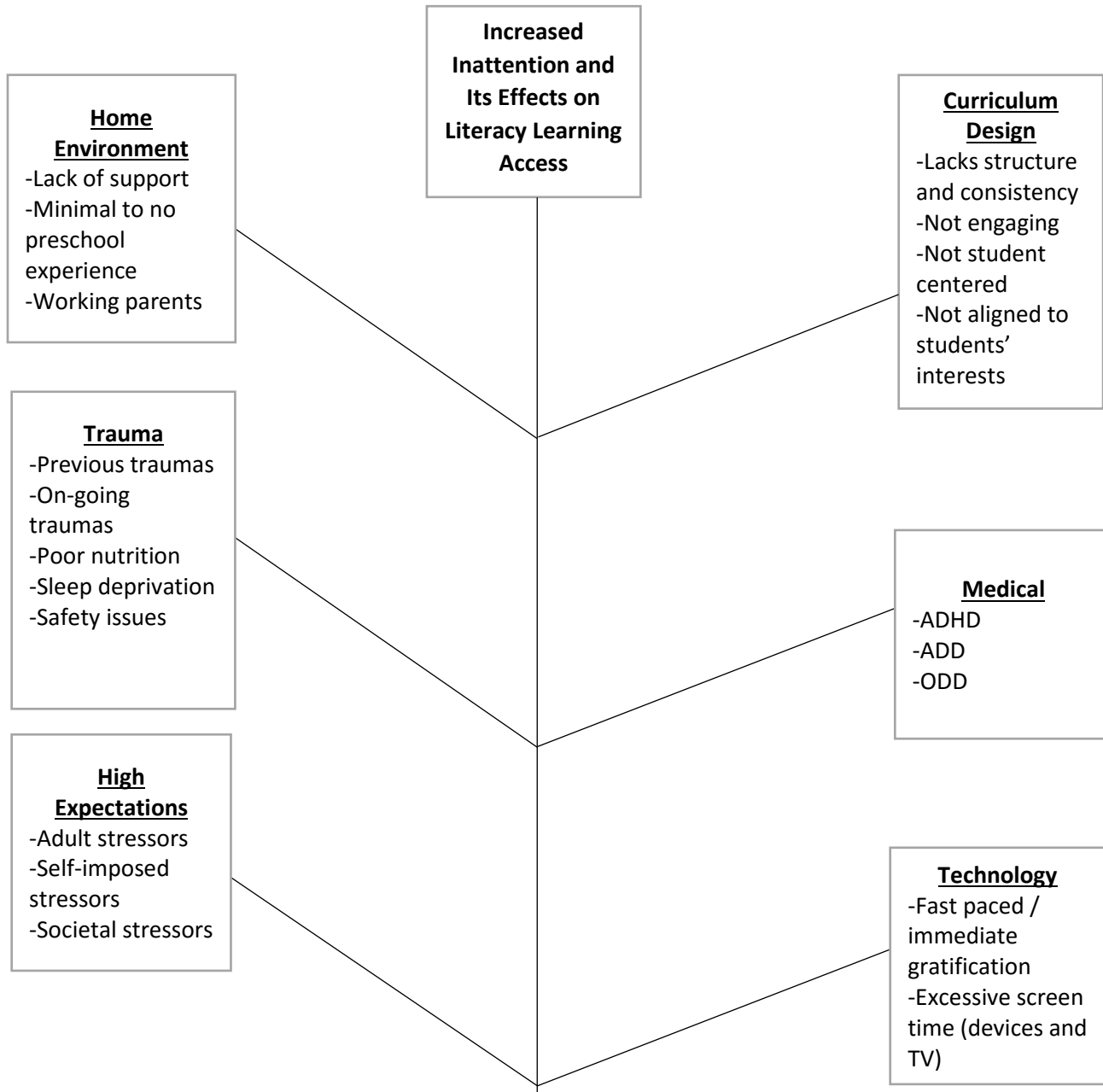
Root Cause Analysis

Hinnant-Crawford (2020) describe the purpose of conducting a root cause analysis to determine what lies beneath the surface of problems. To ascertain the depths of the problem, she suggests that a researcher, "view the problem from various perspectives" (p. 49). Understanding the root cause of a problem could lead practitioners towards a more applicable intervention.

To analyze of the root causes of the problem of increasing inattention in students and its effect on literacy learning access, the researcher used a fishbone diagram (see Figure 1.2). A fishbone diagram is a visual representation used to display casual factors prevalent to the problem in question. Typically, the “bones” in the diagram result from conversations held with stakeholders closest to the problem also known as “end-users” (Hinnant-Crawford, 2020).

Figure 1.2

Fishbone Diagram to Represent Root Causes of Inattention and its Effects on Literacy Learning Access



End-user conversations alongside the school-site empathy interview survey data revealed six root causes towards the increase in inattention and its effects on literacy learning access. First, home environmental factors could cause inattention as well as impact poor literacy skill acquisition. Both situations of single-parent homes and two-working parent homes often leave students without the one-on-one attention and home support necessary to help them emotionally as well as academically. Often these same factors result in students having minimal to no prior preschool experience, leaving them behind their peers both academically and socially when entering kindergarten. According to the Institute of Education Sciences, a publication for the National Center for Educational Statistics reported that in 2019 only 59% of children attended a “nonparental care arrangement” prior to entering kindergarten (IES, 2020) such as daycare or preschool. These arrangements may or may not be accredited in addressing children’s developmental needs nor preparing them for entering grade school. As a result, home environmental factors could cause both inattention and low proficiency in literacy learning.

Second, trauma could be a root cause of inattention and create difficulty in accessing learning. When students have varying degrees of trauma, it leaves their minds in a constant state of “flight” mode and unable to self-regulate to a calmer state that is conducive to learning (MAC, 2005). Using SEL tools for self-regulation such as breathing techniques is a trauma-informed way to help students reset their brain in learning readiness (Gibbs, 2017). Students may come into kindergarten with previous traumas that need healing or on-going traumas that place them in a constant state of fear and anxiety, which may manifest in inattentive behaviors and poor academics. Additionally, traumas may connect to home environmental factors that could impact students’ safety, nutritional needs, medical needs, and invoke sleep deprivation. Any of these elements of trauma could influence a student’s inability to attend to his or her learning.

Third, high expectations could be a root cause of inattention as well. As a result of high expectations, students may experience higher than typical levels of stress, which could impact their ability to attend to their learning. Stress could come from adults such as parents setting lofty goals or educators setting excessively high standards. Stress could also come from the students themselves as some students set their own high expectations and struggle with overcoming failure. Stress could also come from societal factors as students see images on assorted devices of extraordinarily successful people and seek to emulate them. Educators can use various SEL techniques to help students handle these and other stressors to help them address their inattention and attend to their learning more.

Fourth, curricular design could also be a root cause of inattention and literacy learning. While any curricular design could affect learning engagement, for this ISDiP project the focus will be on literacy curriculum specifically. Learning to read in kindergarten requires a carefully scaffolded and engaging series of learning progressions. One cannot begin to master isolating letter sounds until he or she has mastered the sound-symbol relationship. Likewise, a reader cannot begin to master the skill of sounding out and blending to read unless he or she has mastered the phonemic segmentation or isolation of sounds in simple words. Vocabulary building and oral language acquisition are prerequisite skills that begin prior to entering grade school and are dependent on early home experiences. A longitudinal analysis of children from both high and low socio-economic backgrounds revealed that children from higher socio-economic backgrounds nearly doubled their vocabulary in six months' time compared to the children from lower socio-economic backgrounds (Hart & Risley, 1995). While several factors accounted for this discrepancy, this left the children from the latter group starting their literacy learning behind their peers, thereby creating the initial learning gap. As time progresses, these students acquire vocabulary but so do their more affluent peers. Without a strong literacy curriculum and interventions to boost the students who are behind, the gap continues to shift forward and grow throughout the school

years and into adult life, where the gap cycle continues with the next generation. An engaging literacy curriculum that is student centered could address these gaps and reduce the inattention students may have when they are behind their peers academically. Furthermore, SEL strategies such as self-regulation techniques could benefit all students, no matter their academic level, to help them focus and access their learning more.

Fifth, medical diagnoses could be factors in student inattention and learning access. Although only outside medical professionals, not educators, can diagnose Attention Deficit Hyperactivity Disorders (ADHD), Attention Deficit Disorders (ADD), and Oppositional Defiance Disorders (ODD), these diagnoses could result in student inattention and when not addressed, in difficulty access learning. Typically, kindergartners do not have these diagnoses, due to the wait time often needed to see if behaviors are developmental versus medical. However, as shown in the background section, diagnoses are on the rise. In kindergarten, even undiagnosed medical conditions could be factors in student inattention and difficulty in accessing learning.

Sixth, technology could be a factor in both increasing student inattention and decreasing learning literacy access. 21st Century students live in a fast-paced society where they often receive instant gratification. Students struggle to wait and work through challenges in a timely fashion, thereby creating an inability to focus when challenges arise. Excessive screen time plays a big role in the fast-paced receipt of information. Screen time in the form of phones, computers, tablets, televisions, video games, etc. all reflect quickly moving images that students can turn off or change when they become disinterested, bored, or challenged, unlike school where they may need to attend for longer periods of time. Recent data by Tamana et al. (2019) associated screen-time with inattention problems in preschoolers. Findings showed “significant externalizing problems... clinically significant inattention problems... and increased risk of meeting criteria for ADHD” (pp.1-2) dependent on the amount of

screen-time viewed. Excessive screen-time for kindergarten students could be a cause of inattention and thus reduce their ability to attain to their learning.

When reflecting on the root causes noted for the problem of inattention and its effects on literacy learning access, some causes are feasible to address, partially feasible, and completely out of the control of an educator. Out of the realm of the educator's control are the root causes of home environmental factors and medical diagnoses. Educators can partially address root causes of high expectations and excessive technology usage through supports in the classroom, although home contributors are out of their control. The two root causes that educators can feasibly address are the effects of trauma and curriculum design. The two causes go hand in hand. The best instruction available will have limited effectiveness if instructional practices are not trauma informed. Likewise, students who are ready to learn and engaged in their learning can only learn so much if the curriculum and instruction do not reflect evidence-based practices. This ISDiP project focused on using the trauma informed SEL strategy of breathing techniques to help students ready their bodies to engage them in accessing their literacy learning. The project's Working Theory of Improvement (WTOI) is: *If breathing techniques get students' minds and bodies ready to access their learning, then increased literacy skills will be evident.*

Purpose and Significance of the Study

The purpose of this study was to determine if it is more impactful to embed self-regulation strategies within an academic lesson or conduct the self-regulation strategy prior to the academic lesson or not at all. This ISDiP project selected six kindergarten classrooms from the same school district, across two elementary schools, to accomplish this purpose. In school-site one, all participating students were pre-tested on their phonemic segmentation skills (quantitative data collection) on Monday of the testing week. From Tuesday through Thursday of the testing week, three classes received phonemic

segmentation lessons. In the intervention class, the researcher guided a self-regulation breathing exercise (the dependent variable) prior to conducting the standard phonemic segmentation lesson (independent variable). In the enhanced intervention class, the researcher embedded the self-regulation breathing exercise throughout the standard phonemic segmentation lesson. In the no intervention / comparison class, the researcher conducted only the phonemic segmentation lesson with no self-regulation breathing exercises. On Friday of the testing week, all participating students were post-tested on their phonemic segmentation skills (quantitative data collection). The study repeated this process at the second testing site across three kindergarten classes again. Approximately one week after the study ended, the researcher concluded the study by conducting participating educator interviews (qualitative data collection) to explore the phenomenon of the SEL and academics connection as well as dive deeper into what they observed before, during, and after the study, in terms of attention and its effects on learning access, as well as their reflection on the outcomes of the data findings. The repeat procedures aimed to improve the study's validity. The researcher conducted all lessons and pre/posttests to improve the treatment fidelity. While the researcher conducted the lessons, the educator in the classroom took anecdotal notes about the participating students' attention behaviors. Additionally, educators learned how to conduct the breathing techniques as well, so that all participants could access the self-regulation strategy at the close of the study.

This study can contribute to the field of education in two ways. First, the study aimed to illuminate the best SEL and academic integration practices that could apply to all subject areas for all students to access their learning best. Second, the study aimed to present a strategy that allowed all students to access their learning independent of their starting learning levels, thereby affording more equitable learning access for underrepresented students. It is the hope that strategies that encourage more equitable learning access can begin to address the societal achievement gap.

If the study findings address the problem of practice successfully, then the study results could inform both instructional practices and curriculum guidelines. Educators could begin to embed other SEL competencies within their academic instruction and curriculum writers could aid in this through crosswalk documents that align the SEL competencies with the academic standards for each learning unit. In this way, even more students could access their learning across multiple subject areas, thereby improving the achievement gap even more. Furthermore, if this study aided in increasing attention and learning focus in the tested school-sites, other schools and districts could apply the research design and intervention framework to improve similar problems in their own organizations.

Research Design

This ISDiP study was a mixed-methods action-research project housed within the framework of Improvement Science. This project benefitted from a mixed-methods format because the “primary experimental design needs to be expanded or enhanced...” (Creswell & Plano Clark, 2018, p.8). More specifically, the project employed the use of a mixed-methods convergent experimental design which aimed to “bring together the results of the quantitative and qualitative data... with the intent of obtaining a more complete understanding of the problem” (Creswell & Plano Clark, 2018, p.65). Additionally, the study applied an intervention and withheld an intervention to determine the extent of the intervention effects (Creswell & Plano Clark, 2018, p.108) with the goal of exploring and answering the research questions.

While the outcome of the study could inform instructional practices for all grade levels, the sampling for this study consisted of kindergarten-aged students. The sampling population consisted of six kindergarten classrooms across two suburban school sites. This study used nonprobability sampling with individuals who were available to participate in the study (Creswell & Plano Clark, 2018). The large sampling size met the quantitative descriptive statistical analysis requirements of “at least 30

participants for a correlational analysis” (Creswell & Plan Clark, 2018, p.177). Qualitatively, the sampling population consisted of six Kindergarten teachers (the six teachers of the six classrooms noted above) across two suburban school sites. This study used nonprobability sampling with these individuals as well. The small sampling size met the qualitative requirements of “...a small number will provide in-depth information about the central phenomenon or concept being explored” (Creswell & Plan Clark, 2018, p.176), in this case, the concept of the best self-regulation intervention practices to improve learning access. In both samples, the source of the participant recruitment consisted of two similar schools within the district that the researcher currently works. The study acquired administrative permissions from the district for this recruitment. The study included all invited participants with no exclusions. However, should one intervention benefit more than another or more than no intervention, the researcher offered willingness to return to conduct the intervention with any groups who did not receive it, after the close of the study, or train the teachers to implement the intervention.

This ISDiP study used a mixed-methods convergent experimental design. First, the study conducted both the quantitative and qualitative strands within approximately the same time frame. Next, the data integration as part of the data analysis process allowed for the qualitative data to add more information to the depth of the quantitative data findings. Last, based on the data analysis outcomes, the researcher drew conclusions, answered the research questions, and provided suggestions for improving the problem of practice. The researcher conducted the study within a single school district, in a single state, across two comparable schools within the district. To allow for the reduction of the confounded variable of maturation as well as afford the students enough time to learn all twenty-six letter sounds (September to December), the study took place across one week in late January. The study conducted several steps to collect and analyze data.

The researcher conducted both strands of data, aided by the teacher participants in the qualitative strand as well as conducting the data integration. In the first phase, the study used a word segmentation assessment as a pre and posttest to determine the quantitative data set. This measure assessed the dependent variable (the pre/posttest) and the independent variables (the embedded versus isolated intervention). The researcher used bivariate quantitative data analysis to determine the statistical significance of pre to post-test growth within groups and across groups as well as a correlational test to determine if factors such as gender and age had any relationship to the assessment scores. Qualitatively, in the second phase, the teacher participants took anecdotal notes regarding on-task focus during the academic lesson as well as participated in debriefing interviews conducted by the researcher after each lesson and again after the study concluded. The researcher manually recorded, transcribed, coded, and identified emerging themes with this data set. In the third phase, the researcher integrated the data by comparing the qualitative themes to the quantitative outcomes and drew correlational conclusions based on both data sets. Integrating data in this way, "...helps explore in more detail the outcome results and explain why the intervention may or may not have worked" (Creswell & Plano Clark, 2018, p.108).

Research Questions and Hypotheses

The ISDiP sought to answer the following research question:

- *What are the effects for kindergarteners on inattention and acquisition of phonemic segmentation skills when self-regulation breathing techniques are embedded into the lesson structure versus conducted in isolation prior to lesson implementation or not conducted at all?*

Furthermore, a quantitative sub-question sought to answer:

- *How do the word segmentation scores compare across groups pre to posttest?*

A qualitative sub-question sought to answer:

- *What focus behaviors are noticed across each group during lesson implementation?*

In seeking the answers to these questions, the project generated new information regarding the possible difference in effects of an embedded versus isolated self-regulation intervention. This study added to the existing research on SEL and academic integration techniques as well.

Based on previous research, professional observations, and neuroscience pedagogy, the researcher hypothesized that the students who received the embedded breathing techniques would yield greater academic outcomes than the students who received the isolated breathing techniques, which would yield greater academic outcomes than the business-as-usual students' academic outcomes.

Limitations of the Study

Although this study aimed to improve students' learning access using a self-regulation breathing technique, the study also hosted a few limitations for consideration. Limitations to the study included potential maturation of phonics skills between assessments, limited generalizability due to convenience sampling, lack of longitudinal data to measure long-term impact, and potential researcher and educator biases, which may align with previous collaborations, and potential variable effects on behavior and academic outcomes such as outside factors and continued learning.

Positionality – The Researcher and The Problem

I have taught for 20 years in the Shelton School District. My career began teaching grades five and six and later I became a kindergarten teacher, which has given me a unique perspective across the elementary grade levels. Several factors have contributed to my views held and choices made as an educator.

My upbringing has contributed to my educational choices. Two middle-class working parents raised, with one older sister and one younger brother. Physically, although I identify as white by race, my family raised us to embrace my various cultures which include Irish, Dutch, German, Swedish, Cherokee Indian, Italian, and French. Incorporating cultural aspects of each of these cultures into our daily lives taught me from an early age the importance of social awareness and diversity. Spiritually, my family raised us in a Christian household as a Lutheran. As such, my family taught us that all people are God's children and acceptance of diversity of any kind, race, or ability, was non-negotiable. Emotionally, my family taught us not to share emotions openly and in everything to work hard, earn, help others in need, and be grateful for what you have without wanting more. As a result of my physical, spiritual, and emotional upbringing, I have taken an open-minded, inclusive, and helpful approach to my teaching over the past 20 years and bring this same outlook to my research.

My love of learning has contributed to my educational choices as well. To be as open-minded and helpful as I can to my students, families, and colleagues, I work hard at continuously educating myself. As a result, when I began to see students in my kindergarten class struggling with anxiety and anger and received feedback from my families about seeing similar behaviors at home, I made it a point to gather more information. On this learning journey I discovered mindfulness living and Yoga techniques. I attended training and received certification in the Mindfulness Yoga4Classrooms program and began to apply my learning to my students through various mindfulness and Yoga breaks between academic subjects. These strategies met with such success that I took on an informal leadership role and began to share my knowledge with other elementary school educators using professional learning, meetings, and virtual forums. As a result of spearheading this initiative, my district awarded me the 2019 Shelton School District Teacher of the Year. My platform was and continues to be to promote the

balance of social-emotional learning (SEL) alongside academic learning using mindfulness and Yoga techniques. This ISDiP research project reflects this platform.

Both my upbringing and my love of learning have contributed to the background knowledge that supports my ISDiP study as well. As a student pursuing my doctorate in Educational Leadership with a focus on Social-Emotional and Academic Learning through Sacred Heart University, I have learned the importance of balancing SEL and academics for increasing more equitable student learning access and overall well-being. The knowledge I have gained impacts my research. I bring to the ISDiP study an expertise in mindfulness and Yoga practices, one of which, breathing techniques, I used as an intervention in the study. As a result of my professional learning circuit on the topic, I also bring an already established rapport with the educators across the district, which seemed to contribute to willing participation and rapport during the interview portions, as well as general support for the project. Finally, I bring a passion for building up the whole child. I have the worldview that all children have the right to learn by any means possible and they can learn and do well if given the right tools to do so. I do not believe all children learn in equal ways, but all children should have equitable access to learning. The balance of SEL and academics, which was the focus of this ISDiP study, is one way to help more students access their learning, despite any background barriers they may have.

Chapter 1 Summary

This Improvement Science Dissertation in Practice study aimed to use a convergent design method within an Improvement Science framework to analyze the effects of embedded versus isolated self-regulation breathing techniques on the phonemic segmentation literacy skill for kindergartners. The project sought to answer the following questions:

- *What are the effects for kindergarteners on inattention and acquisition of phonemic segmentation skills when self-regulation breathing techniques are embedded into the lesson structure versus conducted in isolation prior to lesson implementation or not conducted at all?*
- *How do the word segmentation scores compare across groups pre to posttest and again to extended posttest?*
- *What focus behaviors are noticed across each group during lesson implementation?*

The outcomes of the project generated new information regarding the possible differences in effects of an embedded versus isolated self-regulation intervention, which could lead to improved instructional practices that balance SEL and academics for more equitable learning access for kindergarten students.

Definitions of Key Terms

- *Adverse Childhood Experiences (ACEs)*: Traumatic events that occur before the age of 18 and are categorized into three groups- abuse, family/household challenges, and neglect (Romero et al., 2018)
- *Mindfulness Breathing Techniques*: Slow, deep breathing intended to activate the parasympathetic nervous system... to improve regulation, attention, and focus (Gibbs, 2017)
- *Executive Functioning Skills*: Abilities that include an individual's problem-solving skills, attention, flexibility, inhibitory control, and reasoning (Gibbs, 2017)
- *Learning Readiness*: The ability to deescalate, problem-solve, and reengage in the learning process (Romero et al., 2018)
- *Phonemic Segmentation*: Given a whole word, separate the word into individual phonemes (sounds) and say each sound (CORE, 2018)
- *Pre-Frontal Cortex*: The "learning" part of the brain where making decisions, problem-solving, planning, and making sense of emotions happens (Gibbs, 2017)
- *Self-Regulation*: One's awareness and ability to control one's emotions and actions (Gibbs, 2017)
- *Self-Management*: The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations (CASEL, 2021)

Chapter 2: Review of Scholarly and Professional Knowledge

Previous research regarding self-regulation interventions and academics, as well as the analysis of current educational practices across several school districts supports the need to address the problem of increased inattention and its negative effect on learning access for students. Using an Environmental Informant Consultation Protocol, the researcher conducted three phone interviews (see Appendix B) from school districts within the state of the Connecticut to better understand the problem. The purpose of these consultations was to determine current knowledge and educational practices as they relate to inattention and learning access in the primary grades. To get a more diverse perspective on these topics, for the interviews, the researcher selected a school district in a higher District Reference Group (DRG), a school district in a lower DRG, and a school district comparable to the DRG with which the researcher conducted the study. The state of Connecticut divides school districts into DRG's based on various data indicators that reflect socioeconomic status, need, and school enrollment (CVC, 2006). As a result of participants' discussion points as well as the analysis of recent research on the same topics of inattention, self-regulation, and learning access, the researcher synthesized the information into four categories:

- Neuroscience Supports Self-Regulation for Learning Access
- Inattention Negatively affects Skill Acquisition
- Mindfulness Breathing Techniques Positively Impact Self-Regulation
- The Majority of Research and Practices are the Result of Isolated versus Embedded Self-Regulation Interventions

After more thorough analysis and review of the research literature, these four categories informed the basis for a working theory of improvement to emerge: *If students are self-regulated throughout an*

academic lesson, then they will be able to access and retain their learning with greater outcomes than if they self-regulate prior to a lesson or not at all.

Literature Review of Category #1: Neuroscience Supports Self-Regulation for Learning Access

Research shows that self-regulation techniques have the power to physically place a learner's brain in the optimal position for learning access and intake. Conversely, inattention can physically impact the brain's functioning. Researchers consistently find disparities in both children and adults with ADHD in the frontal lobes of the brain, among other areas (Frodl & Skokauskas, 2012; Hart et al., 2013). These findings are important because the frontal and prefrontal lobes are responsible for the executive functioning of regulating one's behavior (Gibbs, 2017). Additionally, students who are experiencing trauma through various adverse childhood experiences (ACE's), place their brain in a perpetual stress-response mode, which places the parts of the brain responsible for regulating thoughts, feelings, and appropriate responses (prefrontal cortex) "on hold" (Romero, et al., 2018, p.69), thereby hindering learning access. However, neuroscience also shows that the use of self-regulation techniques can return those same parts of the brain into a state of learning readiness (Gibbs, 2017). Furthermore, studies have shown that focusing on self-regulation in education can positively impact future academic trajectories, when started in early grades (Blair & Raver, 2014) as well as noting that reduced self-regulatory abilities can account for some academic gaps in English Language Learners and students of lower socio-economic backgrounds (Finders et al., 2020), thereby giving hope to the use of self-regulation to allow more equitable learning access. The understanding of the science behind how students read and learn is growing (Dehaene, 2009). As educators continue to build their knowledge about how the brain learns, then they can begin to incorporate educational practices to support optimal learning conditions, such as self-regulation techniques (McTighe & Willis, 2019).

Professional Knowledge Review of Category #1: Neuroscience Supports Self-Regulation for Learning Access

The Environmental Informant Consultation revealed two themes related to this category. First, a gap remains in equitable learning access for various subgroups. Districts confirmed a gap in equitable learning access for groups with “lower socio-economic status” and “high needs groups as well as a few of our racial subgroups- Black and Hispanic.” They noted barriers to learning access as including “home access to the same resources as students of higher economic status” as well as a lack of survival needs such as “food and clothing,” and finally, “parents’ mental health issues” as barriers to equitable learning access. Second, while districts had some training in trauma-informed practices and the use of social-emotional learning strategies, interviewees noted that there had been very little education on the neuroscience behind why a student may lose the ability to self-regulate and how to use self-regulation to initiate a recovery response effectively. Phrases such as “exposed only a little bit,” “I don’t think they know it well,” and “they are in the infancy stage of training with a clinical psychologist who deals with trauma-informed instruction” all support the need for additional education in how neuroscience can support self-regulation for more equitable learning access. Not only is self-regulation a useful tool to aid in more equitable learning access, but it can be useful to combat the negative effects on academic skill acquisition that comes with increased inattention in students.

Literature Review of Category #2: Inattention Negatively effects Skill Acquisition

Research shows that inattention can hinder academic skill acquisition. After conducting a meta-analysis of 75 studies involving both preschool and kindergarten-aged students, researchers Allen et al., (2014) found a statistically significant relationship between self-regulation and academic skill acquisition. Higher self-regulatory behaviors often yielded higher academic skills while lower self-regulatory behaviors often related to lower academic skills, thereby suggesting that more regulated

attention could lead to stronger skill acquisition. These findings transcend subject area as well. Coldren (2013) conducted similar research in mathematics and found that a kindergartners ability to have cognitive control predicted stronger math assessment outcomes. Furthermore, several studies reflect similar findings in literacy (Daunic et al., 2013; Garwood et al., 2017; & Ogg et al., 2016) where results connected students with higher inattention with lower reading scores. Additionally, these studies suggested that the use of an academic enabler such as a self-regulation strategy, could generate more positive academic outcomes for students.

Professional Knowledge Review of Category #2: Inattention Negatively effects Skill Acquisition

The Environmental Informant Consultation revealed one theme related to this category. Inattention not only negatively effects skill acquisition but is steadily increasing in primary grade students as well. Comments such as “I have seen a consistent trend over the last five years” sets the tone for this growing problem. One participant also noted that 25% of the behavioral reports that she receives from the elementary school level reflect “major concerns with inattention and lack of focus” beyond typical development. Another participant noted how special education referrals have increased over the last two years with referrals for both academic and behavioral concerns. It is important to also note that this same district has seen an increase in their emotional referrals. Whether it is formal referrals or informal anecdotal reflections, the consultations across all three districts revealed the negative effects growing inattention has on academic skill acquisition. However, mindfulness breathing techniques could positively impact that inattention, thereby regulating students and placing them in a mindset to acquire their academic skills better.

Literature Review of Category #3: Mindfulness Breathing Techniques Positively Impact Self-Regulation

Research shows that mindfulness breathing techniques could help regulate learners. According to leading mindfulness expert and founder of the Center for Mindfulness, Jon Kabat-Zinn, being “mindful” refers to having a “presence of heart” or focusing and attending to the present moment (Greater Good Science Center, 2010). While there are several techniques to guide one in being more mindful, breathing techniques are particularly effective in helping one focus their attention more (Kabat-Zinn, 1994). Not only have studies shown an increase in attention and overall behaviors because of the application of various mindfulness techniques including breathing practices (Thomas & Centeio, 2020; & Vekety et al., 2021), but researchers Bergen-cico et al. (2015) revealed long-term self-regulation increases as well. These findings give hope for the sustainable effects of a mindfulness breathing intervention. Furthermore, Diamond and Lee (2011) discovered that students with high needs such as ADHD, low executive functioning skills, and from lower socio-economic status gained the most from interventions that helped them improve their self-control. This finding supports the use of mindfulness techniques to equitably improve self-regulation and learning access, no matter a students’ starting level or disability. Although several mindfulness strategies exist, various strategies have various purposes. Mindful breathing initiates the body’s parasympathetic nervous system, which aids in attention, focus, and self-regulation (Gibbs, 2017).

Professional Knowledge Review of Category #3: Mindfulness Breathing Techniques Positively Impact Self-Regulation

The Environmental Informant Consultation revealed one theme related to this category. While some districts apply some social-emotional strategies, there is not a lot of knowledge or application of mindfulness breathing techniques to aid in self-regulation. To combat the problem of increased

inattention in students, participants noted the purchase of a behavior intervention manual to aid educators with techniques, training in culturally responsive classroom methods, interest-grabbing activities, and beginning to incorporate professional development in this area. Despite these strategies, the common theme was that educators “Are not as prepared as they could be.” As a result of these findings, it is apparent that educators need more information and training regarding the promising intervention of mindfulness breathing to improve self-regulation and attention in students. However, most information available reflects the use of this intervention as an isolated break prior to beginning an academic subject. This ISDiP study aimed to determine if an embedded approach may be more impactful.

Literature Review of Category #4: The Majority of Research and Practices are the Result of Isolated versus Embedded Self-Regulation Interventions

When applying a self-regulation intervention, most research uses an isolated approach. However, this approach still yields positive academic outcomes in a variety of subject areas and across age-groups from preschool through the third grade. Researchers Caughy et al., (2018) as well as McClelland et al., (2007) determined that addressing a student’s self-regulation correlated with positive outcomes in both math and reading. Additionally, Chang (2020) found that differing levels of executive functioning skills, which include self-regulation, related to differing reading comprehension levels. Kim & Linan-Thompson’s (2013) research showed that a self-regulation intervention could improve science vocabulary learning. In the subject of writing, Puranick et al., (2018) used a self-regulation intervention that revealed a significant relation to stronger early writing skills. Literacy in general houses several research studies supporting the use of isolated self-regulation studies as positively impacting overall literacy outcomes (Cruz et al., 2019; Saez et al., 2012; & Sims & Lonigan, 2013). While most studies support the powerful impact of using an isolated self-regulation intervention to improve academic

outcomes, a smaller amount of research suggests that embedding the self-regulation intervention into the academic lesson could lead to even greater academic and behavioral gains (Daunic et al., 2013; Jones et al., 2011; & Van de Sande et al., 2018). However, current educational practices do not reflect these findings.

Professional Knowledge Review of Category #4: The Majority of Research and Practices are the Result of Isolated versus Embedded Self-Regulation Interventions

The Environmental Informant Consultation revealed two themes related to this category. First, all participants currently use social-emotional programs, which include explicitly taught isolated lessons. Second, there are minimal materials nor training available to aid educators in embedding these skills directly into the academic curriculum once isolated lessons establish key skills. One district uses, specific targeted social-emotional learning lessons, which include self-regulation, which the school psychologist and social worker conduct. In this same district, educators received training in the use of restorative circles to address behavior problems. Educators use these circle talks in isolation during morning meetings or transitions between academic lessons “when situations arise.” Other participants reflected that their districts addressed social-emotional learning and self-regulation in a similar manner. When asked about carryover of these skills by embedding them into the academic curriculum, all participants noted that there were no materials nor training to support this type of intervention, except when embedding social-emotional discussions alongside character analysis in literacy, and any hope of carrying over SEL skills hinged on the “buy-in” of the educator as well as the degree of established student-teacher relationships, due to the lack of training and materials. As a result of these findings, there is a need for further information regarding how to embed SEL skills into academic curriculum and specifically, embed self-regulation breathing techniques to address the problems of inattention and learning access.

Working Theory of Improvement

The Improvement Science process consists of four cyclical phases: *plan, do, study, act* (Bryk et al., 2017). A working theory of improvement uses past research and experience to inform these phases. Based on the information gathered from both the current research literature and the professional knowledge of current practices, a working theory has evolved: *If students are self-regulated throughout an academic lesson, then they will be able to access and retain their learning with greater outcomes then if they self-regulate prior to a lesson or not at all.* Furthermore, this working theory of improvement could address some of the initial root causes of the growing problem of practice of inattention negatively impacting learning access for students. When problem of inattention as it relates to learning access, the root cause analysis revealed some causes to be out of the realm of the educator's control, partially in the realm of the educator's control, and within the realm of the educator's control. Causes such as home environment and medical diagnosis are out of the control of the educator but can play a big role in why a student may struggle to attend to his or her learning. Having educators and family members hold unreasonably high expectations or allowing for excessive use of technology can also factor into why students may struggle to attend to their learning. Educators can have some potential to mitigate the impact of both these causes within the classroom only. However, while educators may not have control over adverse childhood experiences their students arrive with, they do have control over the trauma-informed practices they choose to use in their classrooms. Additionally, they may also control over how they embed these trauma-informed practices within their academic instruction. Using mindfulness breathing techniques as part of instructional practices may be an impactful trauma-informed way to aid educators in helping students address their inattention, self-regulate, and access their learning better.

Student inattention drives the problem of reduced readiness to access learning. While a plethora of factors could cause inattention, neuroscience, current research, and current educational practices suggest that students will not be able to access their learning if they are not in the right mindset to do so. If inattention hinders a student's readiness to access learning, then educators need to determine the best way to address this problem. There are several strategies that could help improve this problem of practice.

Strategies to Mitigate the Problem of Inattention

To mitigate the problem of inattention and place students in learning readiness, educators use various behavior management strategies (see Table C). One such strategy is the Clipping Chart. Clipping Charts are one way to address inattention. This color-coded chart has degrees of support. Every child has a clip on the middle green card that reads, "Ready to Learn." Throughout the day, students can move up the chart towards the purple card that reads, "Outstanding" or down the chart towards the dreaded red card that reads, "Parent Contact." Students can move up and down the chart in accordance with their behavior throughout the school day. Typically, at the end of the day, the color they land on will result in either a reward or a consequence. While the clipping chart provides a student-friendly visual of their behavior throughout the day, which could drive attention and focus, it can often be demoralizing to students who struggle to self-regulate on their own and always seem to end up clipping down in front of their peers (McIntosh et al., 2020). Furthermore, this strategy has on-going costs for clips and rewards and the response to behavior does not match the student action. For example, if a student is not on task in a group activity, they would clip down then return to the group where the behavior would likely be repeated versus asking the student to step away from the group to reset their body, which is a more logical consequence. Additionally, this strategy often interrupts instructional time in the primary grades as students get up in the middle of a lesson to clip up or down and may have

logistical needs such as reaching a higher color or struggling with the clips, due to growing fine-motor development.

The use of raffle tickets is another way to mitigate the problem of inattention. This is a “rewards-only” behavior management strategy in which students receive a raffle ticket for positive behavior. They write their name on the tickets and enter them in a prize drawing at the end of each week. The more tickets received, the better the chances of winning. This strategy may motivate some students to attend to their learning, but it only addresses on-task students (Lewis, 2019). This strategy may also negatively impact off-task students who see themselves as “never getting a ticket” because they struggle to self-regulate. The strategy has on-going costs for tickets and prizes and interrupts instructional time while handing out tickets and waiting for students to write their names on them. Additionally, the ticket response does not match the behavior. For example, if a student is on-task and completes an assignment efficiently with good behavior, then they receive a ticket versus challenging that student with the next step in their learning.

Another behavior management strategy educators often use to mitigate the problem of inattention is the use of attention grabbers. These take the form of various items such as chimes, lights, sounds, and whistles (Jennings, 2016). For example, when a teacher wants the classes’ attention, he or she might chime a chime or flick the lights. They may also accompany this strategy with a countdown: 5-4-3-2-1. By the time they get to “1,” the teacher expects the class to be at attention. While the cost for this strategy is typically a one-time cost for the chime, whistle, or sound machine, etc., the strategy is not sustainable for individuals who struggle with regulating themselves. The strategy’s effectiveness depends on the frequency of use as well.

The use of movement breaks that include high impact exercises is another way to mitigate the problem of inattention. Educators might use this behavior management strategy as students transition

from one subject to another. Often, commercial video programs such as Go Noodle offer pre-made video dances and exercises for educators to play while students mimic the performers. This strategy is usually a low, one-time cost for the program and allows students to release their energy, which could lead to getting their bodies ready to focus and learn (Terada, 2018). This strategy is useful for educators who lack the confidence or physical ability to lead a movement break that requires high impact. While the strategy is more sustainable than some of the other strategies, it would require frequent use and can reduce instructional time. The strategy may also challenge students with physical disabilities or weight problems as well as emotional insecurities about dancing or exercising in front of their peers, which could create an inward withdrawal inattention response.

The use of Mindfulness self-regulation strategies, specifically breathing techniques, is another way to mitigate the problem of inattention. This is a no cost behavior management strategy that requires quick, easy training. Once learned, both students and educators can use it independently as needed as well as in whole group situations as transitions between subjects and within academic learning. The strategy is sustainable and takes little to no instructional time. Furthermore, the strategy is trauma informed as both a preventative and restorative strategy, which could address students with additional inattention causes (Coping Skills for Kids, 2021).

Intervention Selection

After analyzing various behavior management strategies (see Table C) that educators could use to address the problem of inattention, the strategy with the highest leverage is the use of Mindfulness self-regulation strategies, specifically breathing techniques. This strategy works on both the physical and emotional level of the participant. It addresses the physiological needs of a student who is struggling with trauma or the ability to self-regulate, and it addresses the student's emotional needs by putting him or her in control of the application of the strategy (Gibbs, 2017). Once explicitly taught, students can

apply the strategy before classes, during classes, whenever the need to self-regulate arises. Educators can conduct explicit whole class practices, which typically take 3-5 minutes of instructional time or students can apply the intervention on their own, which has minimal to no instructional disruption time. The strategy requires no cost, very little, easy training, and is sustainable once established. Besides these benefits, this trauma-informed strategy helps in both preventing inattentive behaviors as well as restoring inattentive behaviors, which promotes a more equitable strategy to address the problem of inattention hindering learning access for all students, no matter where they are academically or emotionally (Romero et al., 2018).

Table C

Behavior Management Strategies to Mitigate the Problem of Inattention

	Pros	Cons	Costs	Interruption to Instruction
Clipping Behavior Chart	Highly visible; students can track behavior progress	Clipping action not aligned with behavioral action	On-going costs of clips and rewards	On-going interruptions throughout the day to “clip up or down”
Raffle Tickets	Motivating to students	Ticket action not aligned with behavioral action	On-going costs of tickets and rewards	On-going interruptions throughout the day as students write names on tickets for raffle
Attention Grabbers (i.e., lights, chimes, etc.)	Gets students’ immediate attention	Does not promote sustained attention	One-time cost of grabber	Minimal interruption
Movement Breaks	Releases pent-up energy; health benefits	Educator training needed to use effectively	Online program one-time costs and educator training	Intentional breaks that yield greater gains than lost time
Mindfulness Breathing Techniques	Trauma-informed for both preventative and restorative use; useable independently	Explicit modeling of correct breathing pacing; educator training	Minimal to no cost; easy training for students and staff	Intentional breaks that yield greater gains than lost time; useable without interruption once learned

Chapter 2 Summary

Synthesizing previous research regarding positive outcomes on academics with applied self-regulation interventions, alongside reviewing current educational practices across several districts surrounding the research study site, revealed how students need self-regulation to address the problem of inattention and access their learning best. Growing inattention among students has negatively affected academic skill acquisition but the Mindfulness practice of breathing techniques could improve this problem of practice by placing the body in ready position to access learning better. While studies have shown this strategy to be successful when used in isolation of academic lessons, this ISDiP study aimed to compare this strategy application to embedding the strategy within academic lessons as well. With the working theory of improvement: *If students are self-regulated throughout an academic lesson, then they will be able to access and retain their learning with greater outcomes than if they self-regulate prior to a lesson or not at all*, this study intended to determine best educational practices for addressing the problem of inattention, which hinders learning access.

Chapter 3: Methodology and Research Design

Study Aims

To analyze and compare the effectiveness of a self-regulation breathing technique on learning access for an Improvement Science Dissertation in Practice (ISDiP) the researcher engaged in conducting a self-regulation intervention along with a series of phonemic segmentation (letter sound identification) lessons. Improvement science is a systematic approach to solving a problem of practice in an educational setting. Problems are validated, drivers are identified, and change ideas are implemented in a continuous cycle of improvement and adjustment (Perry, Zambo, & Crow, 2020). Improvement science allows educational organizations to understand on a deeper level how their systems work and what positively or negatively affects their improvement reforms (Perry, Zambo, & Crow, 2020). This study aimed to compare the effectiveness of an intervention to determine best instructional practices.

The specific aims of this study were to:

- 1) Analyze the effects for kindergartners on inattention and acquisition of the phonemic segmentation skills when self-regulation breathing techniques are embedded into the lesson structure versus conducted in isolation prior to the lesson implementation or not conducted at all.
- 2) Compare word segmentation scores across groups pre to post-test.
- 3) Explore what focus/inattention behaviors are noticed across each group during and after lesson implementation.

Theory of Improvement

Improvement Science follows a systematic cycle of experimentation (Bryk et al., 2017). This cycle of inquiry has four phases: *plan*, *do*, *study*, and *act*. Each of these phases inform the mixed-methods convergent design of this action research project. In the first phase, the researcher conducted an

analysis of the problem of inattention, and its effects on literacy learning access, in terms of its setting and systems as well as its root causes. Next, the researcher synthesized this information with current literature and professional practice knowledge gathered. This information then informed a possible theory of improvement or prediction about how best to address the problem. Once a theory of improvement was determined, the researcher designed an experiment to apply the intervention to determine the degree of effectiveness. In the second phase, the researcher applied the intervention of embedded and isolated breathing techniques to the problem of inattention during a literacy lesson. Using pre and post-test academic data, inattention checklists, and educator interviews, the researcher determined to what degree the intervention was or was not successful in mitigating the problem of practice. In the third phase of the Improvement Science cycle, the researcher studied and integrated both the quantitative and qualitative data gathered. This phase directly aligned with the researcher's choice to use a convergent mixed-methods design model. Finally, in the fourth phase of the cycle, the researcher used the findings to act on the problem of practice. In this phase, the researcher answered the research questions and based on the findings, the researcher made suggestions to continue the intervention application as an improved educational practice and repeat the Improvement Science experimental cycle again. Through the phases of this cycle, the researcher viewed the problem through a deeper lens of exploration to fully understand it versus just trying to solve the problem in a less sustainable way.

Setting

This study took place across two elementary schools from within the Shelton Public School System in Shelton, CT. While the setting in each school is similar, the populations differ slightly. The first school site hosts a higher number of multi-lingual learners, students with disabilities, and students who qualify for free and reduced lunch. The second school site has a lower percentage of these same subgroups. Conducting the same study across the two sites allowed additional outcome comparisons

across varying populations. The researcher chose these schools instead of the researcher's home school-site to reduce response bias and increase diversity of the sample. Additionally, the researcher also selected these schools, instead of other schools in the district, because their size offered accessibility to the number of classrooms required per the project's research design. The researcher determined which classes would receive the intervention, the extended intervention, or no intervention based on convenience scheduling, based on each classes daily program of work schedule, which was already in place at the time of the research.

Sampling Plan

The researcher took several steps to secure this study's sampling. First, after training in conducting ethical research (see Appendix C), analyzing the problem to address, and designing the research project, the researcher presented the research plan to the school superintendent to secure permission to conduct the study across the chosen two school sites (see Appendix D). The researcher used this permission as part of the Institutional Review Board application, which secured permissions to conduct the study as well (IRB #211015A). Second, the researcher met with the administrators of each school site to explain the study process and secured the classrooms, students, and educators required. Third, the researcher met with the educators to clarify the researcher and educator roles in the study as well as secured both student and educator consents. Except for the initial district and administrator meetings, all meetings were virtual, and all consents received electronically. To reduce selection bias and maintain external validity further, the school-site administrators selected the classrooms that participated in the study. As a result, the researcher invited a total of six kindergarten classroom teachers and approximately 125 kindergarten students to participate. The study anticipated that 100% of teachers and 75% of students would consent to participate. The study received 100% of teachers and 92% of students consenting to participate.

This study used data collected and interventions applied in the Shelton Public School District in Shelton, CT, specifically at school sites: Elizabeth Shelton Elementary School and Long Hill Elementary School, both of Shelton, CT. The sampling for this study consisted of kindergarten-aged students. Quantitatively, the sampling population consisted of six kindergarten classes across two suburban school sites (Elizabeth Shelton and Long Hill Elementary Schools of Shelton, CT). Among approximately 20-23 students per class, students consisted of ages ranging between five and six as well as mixed genders and mixed academic and behavioral levels. Although the researcher invited a maximum of approximately 125 student-participants to participate, the researcher utilized an “opt out” letter (see Appendix E) for student-participants’ consent, and the study anticipated at least a minimum of 75% of the families would allow their child to participate. Qualitatively, the sampling population consisted of six kindergarten teachers (the six teachers of the six classrooms noted above) across the same two school sites. The six teachers had mixed ages, mixed experience levels, and were all female. The maximum number of teachers invited to participate was six with an anticipated minimum number of six participants as well (it is in their best interest to participate) and the researcher utilized an informed consent form for these adult participants (see Appendix F). Of importance to note is that the researcher is not in a superior position to the invited teacher participants and does not teach in the selected research school-sites, therefore selecting the option of refusal to participate would not impact their employment nor their collegial relationship with the researcher. Sampling procedures and protocols in both strands consisted of obtaining IRB permission, considering ethical concerns, and transparently disseminating all research components and findings as well as offering intervention access to all groups, if the findings reveal intervention benefits.

Intervention

This study applied and withheld an intervention and an extended intervention across one week. The study collected quantitative data in the form of pre and post phonemic segmentation scores. The researcher used three groups for comparison. The no-intervention group received only the phonemic segmentation lesson. The intervention group received an isolated breathing exercise prior to receiving the same lesson. The extended intervention group received the same lesson; however, the researcher embedded additional breathing points within the lesson implementation as well. Additionally, while the researcher presented the lessons, the teacher of each group completed an inattention checklist to reflect observations of the students' attention behaviors. After each lesson, the researcher collected qualitative data using debriefing interviews with these teachers. Approximately one week after the intervention sequence was complete, the researcher conducted a follow-up interview with the participating educators to integrate quantitative findings. The researcher conducted all lessons/interventions and both strands of data, along with the aid of the teacher participants in the qualitative strand.

The researcher took both the academic lessons and self-regulation breathing techniques from current district literacy curriculum and educational practices. The researcher used the Wilson Language - Foundations Grade K (2012) materials for the phonemic segmentation lessons. In addition, the researcher used a combination of breathing techniques taken from the text "2,4,6,8 This is How we Regulate" (2019) from licensed counselor and play therapist expert, Tracy Turner-Bumberry alongside the children's book, "Alphabreaths: The ABC's of Mindful Breathing" (Willard, Rechtschaffen, & BCifton-Brown, 2019). Furthermore, the researcher conducted all interventions applied as well as interviews, in compliance with current state and CDC COVID recommendations and best practice guidelines to reduce transmission, including maintaining recommended distance from participants and the following of mask mandates.

Quantitative Data Collection

The study applied descriptive statistical analysis to the quantitative data retrieved from the pre and post-test scores of the CORE Phonemic Segmentation Literacy Assessment (see Appendix G) scores and the BOSS attention behavior checklist (see Appendix H) outcomes. Both the assessment scores and the checklist data measured the dependent variables of the study, while the intervention and extended interventions measured the independent variables. The researcher used bivariate quantitative data analysis to determine the statistical significance of pre to post-test growth within groups and across groups as well as a correlational test to determine if other factors such as gender and age had any relationship to the assessment scores.

Measures

The study used two measures in the quantitative data strand collection. The first measure, used to assess the pre and post-test phonemic segmentation scores, was the CORE Phonological Segmentation Test – Part C: Phonemic Segmentation Test. The Consortium on Reaching Excellence in Education (CORE) has worked across the nation with more than 100,000 educators over the last 25 years (CORE, 2021) to improve both literacy and math instruction and assessment. Their learning tools and assessments come vetted, reliable, and aligned with the science of reading (CORE, 2021). Using the CORE Literacy Library Assessment manual, the researcher adhered to established testing protocols for implementing the pre and posttest assessment to allow for consistency and increased measurement fidelity.

The participating educators conducted the second measure. This measure, known as the BOSS behavioral checklist, is also a vetted measurement tool that, originally used in the field of psychology, but quickly found its way into the educational setting (Pearson, 2013). Similar behavioral studies have

used it as well (Bahr et al., 2012; Breisch & Daniels, 2013; DuPaul et al., 2004; Hosterman et al., 2008; Junod et al., 2006; Kraemer et al., 2012; Pffiner et al., 2013; Riley et al., 2011; & Steiner et al., 2013). Although the assessment tool has multiple observation categories, for this ISDiP study, the researcher selected four subcategories to observe: *engagement*, *manipulation of objects*, *off-task audibles*, and *passive listening*. The researcher chose these categories as typical distraction behaviors of this age group and the study aimed to mitigate them through the breathing technique intervention. Both measurement tools reflect already established supplemental assessments used in the researcher's school district.

Qualitative Data Collection

Additionally, to gather qualitative data, the study conducted debriefing educator interviews after each lesson implementation as well as a final educator interview to reflect on findings. The researcher manually recorded, transcribed, coded, and drew conclusions about emerging themes with this data set. The study selected two types of research questions for both interview data collections: *exploratory questions* and *interpretive questions*. Using the exploratory type questions, the researcher aimed to understand the topic deeper through the lens of the participants, whereas the interpretive question types aimed to gather feedback on the group's behaviors as well as interpret and make sense of the shared experience (Your Dictionary, 2021). After each lesson intervention, the researcher used the following debriefing questions:

- *How engaged/focused do you think students were in the lesson today?*
- *What factors do you think affected student engagement/focus and/or learning access in the lesson today?*
- *What else did you notice regarding the student's engagement, presentation of the lesson, and/or students' acquisition of the skill being taught?*

After the conclusion of the study, approximately one week later, a follow-up interview asked the following questions:

- *To what extent has the intervention carried over beyond the lesson implementation?*
- *(Present Findings) How did the outcomes relate to your observations during lesson implementation?*
- *What limitations and/or additional supports do you need in order to use these outcomes to improve your students' self-regulation and overall learning access?*
- *How has this project impacted your own educational practices?*

Through this study's convergent experimental design, this study aimed to use this qualitative data to inform the quantitative data collected to better understand the problem of practice, which may lead to understanding ways to address the problem better as well.

Data Plan Analysis

Analysis of how both data strands integrate would determine suggested changes to instructional practices and next steps in the Improvement Science process. After applying the intervention and gathering both the quantitative and qualitative data, the researcher integrated the data by comparing the qualitative themes to the quantitative outcomes to provide further meaning to the different types of data collected in the study. Integrating data in this way could explain the outcomes of the intervention in more detail (Creswell & Plano Clark, 2018). The researcher sought both member checking and external audits to validate the findings further. The researcher displayed all de-identified quantitative and qualitative findings in tables as well as described in narrative form within this ISDiP study. The choice to analyze these data in this manner reflected the convergent design model whereby the quantitative and qualitative data inform one another to further illuminate and understand the studied problem.

Limitations

There are some limitations to this study to consider when analyzing the study outcomes. First, there is the limitation of generalizability. The researcher conducted the study using kindergartners and kindergarten educators; therefore, it was a convenience sampling and not reflective of other grade levels. Additionally, the study focused on the effects of embedding the intervention before or during a literacy lesson and outcomes may or may not transfer to other subject areas. Furthermore, the study took place across two elementary school sites in a suburban school setting with ranges of 25% to 47% free and reduced meal students (CSDE, 2021), thereby not representative of all socio-economic groupings nor all underrepresented groups.

The study design had some limitations as well. The researcher created the intervention using both literacy lesson and mindfulness knowledge and was not a vetted intervention. Furthermore, although the study addressed the SEL competency of self-management through self-regulation, there is a plethora of other components to this competency as well as four other competencies, which the study did not address but are all part of the overarching goal of balancing SEL and academics.

Lastly, this study design may have had short-term limitations also. Variables such as maturation of skills and behaviors within the time frame and inflexible time limitations may have impacted findings. Furthermore, there may have been a degree of researcher and educator bias due to previous collaborations as fellow colleagues. The study addressed the limitations to the best of the researcher's abilities; however, they should be kept in consideration when analyzing study outcomes.

Chapter 4: Findings

The aim of this ISDiP was to compare the effects of breathing techniques embedded into the phonemic segmentation lesson, conducted prior to the lesson, or not conducted at all on both inattention and academic outcomes. The study sought to answer the research questions: *What are the effects for kindergarteners on inattention and acquisition of phonemic segmentation skills when self-regulation breathing techniques are embedded into the lesson structure versus conducted in isolation prior to lesson implementation or not conducted at all? How do the word segmentation scores compare across groups pre to posttest? What focus behaviors are noticed across each group during lesson implementation?* The purpose of this study was to add to the limited information available regarding best practices for integrated SEL and academics to improve equitable learning access.

Although the study followed the key components outlined in the study's methodology section, the researcher made three adjustments either prior to or during the field work application of the intervention. Initially, the study design allowed for the field work portion to take place across two weeks. The first week would be at the first school site and the second week at the second school site, repeating the same study design. This would have allowed the researcher to do immediate follow-up face-to-face debriefing interviews with the involved educator participants. However, to accommodate the substitute shortages in the school district, the researcher had to conduct the field work across one week instead, with the first school site completed in the morning school hours and the second school site completed in the afternoon school hours across one week. As a result, the researcher conducted all debriefing interviews in the evening via the telephone. The second adjustment made was moving the field work start date. Intended to begin the second week of January, due to an increase in the Omicron COVID virus, the district asked the researcher to move the start date to the first week of February to allow for the surge of both student and staff absences to subside. As a result of this change, participating

students had received a brief introduction to the phonemic segmentation skill prior to the study. The third adjustment occurred during the field work week. As a result of a weather-related late start and snow day, the study designed moved to a two-lesson sequence versus the initial three-lesson sequence and the researcher had to conduct the second school site post-tests the following Monday, two days after the intervention sequence was complete. Other than these three minor logistical adjustments, the researcher conducted the methodology with fidelity as designed. After the close of the study, the researcher created a video version of the implemented breathing techniques and distributed to all participating classes as well as interested non-participant classes.

Description of the Sample

There were two types of participants used in this study. The study used six adult educators, all identifying as female, to conduct attention observation checklists as well as participate in interviews and member checking of outcomes. These educators averaged 11.5 years of experience, and having five or more years of contractual teaching experience, the district categorized them as having “tenure” or as vetted teachers. Although not all six participants have taught in the kindergarten grade level, all six have taught in the primary level grades (Kindergarten through grade two) throughout their career.

Additionally, there were 110 Kindergarten participants (see Table D) whose ages ranged from five to six. Each class category group was comparable in terms of number of boys versus girls and students receiving special services in subgroups such as English Language Learners (ELL) or students receiving specialized instruction. Although all students in all groups currently receive Tier one behavior management support as part of best educational practices, educators may also place some students on a Tier two support system, such as an individualized behavior chart, to help them further with their personalized behavior management. The last column represents these students whose behaviors may have impacted data outcomes.

Table D*Student Participant Demographics*

Class Category	Gender	Subgroups (ELL and/or Special Education)	Receiving Tier 2 Behavior Support	Race
Intervention Group (n=38)	53% boys (n=20) 47% girls (n=18)	18% (n=7)	0% (n=0)	Black: 21% (n=8) Latino: 16% (n=6) Asian: 3% (n=1) White: 58% (n=22) Other: 3% (n=1)
Extended Intervention Group (n=35)	46% boys (n=16) 54% girls (n=19)	14% (n=5)	6% (n=2)	Black: 11% (n=4) Latino: 14% (n=5) Asian: 11% (n=4) White: 57% (n=20) Other: 6% (n=2)
No Intervention Group (n=37)	43% boys (n=16) 57% girls (n=21)	14% (n=5)	5% (n=2)	Black: 5% (n=2) Latino: 27% (n=10) Asian: 8% (n=3) White: 46% (n=17) Other: 14% (n=5)

Data Collection

This study collected both quantitative and qualitative data. Outcomes of the quantitative data aimed to answer the overarching research question: *What are the effects for kindergarteners on inattention and acquisition of phonemic segmentation skills when self-regulation breathing techniques are embedded into the lesson structure versus conducted in isolation prior to lesson implementation or not conducted at all?* as well as the quantitative sub-question: *How do the word segmentation scores compare across groups pre to posttest?*

The study used paired-sample t-tests to evaluate various effects. To analyze overall effects on academic scores, the tests revealed that there was a statistically significant increase in academic phonemic segmentation scores $t(109) = -12.93, p < .001$ from pre-test to post test (see Table E). To analyze the effects of not using the breathing technique intervention on both the academic and

inattention scores, the paired-sample t-tests revealed that there was a statistically significant increase in academic phonemic segmentation scores $t(36) = -7.02, p < .001$ from pre-test to post test in this group, but no other significant inattention changes (see Table F). To analyze the effects of applying the breathing techniques intervention prior to the start of the academic lesson, the paired-sample t-tests revealed that there was a statistically significant increase in academic phonemic segmentation scores $t(37) = -7.58, p < .001$ from pre-test to post test in this group as well as an approaching statistical significance in inattention scores in the categories of Physical/Bodily Movements $t(37) = 1.72, p = .09$ and Engaged in Passive Listening $t(37) = 1.87, p = .07$ (see Table G). To analyze the effects of applying the breathing techniques intervention throughout the academic lesson, the paired-sample t-tests revealed that there was a statistically significant increase in academic phonemic segmentation scores $t(34) = -8.10, p < .001$ from pre-test to post test in this group as well as a statistically significant increase in the inattention category of Off-Task Audibles $t(34) = 2.79, p = .01$ from pre-test to post test.

Table E

Paired t-test Results for Academic Skills and Inattention from Pretest to Posttest Overall

		m	sd	t(109)	p
Phonemic Segmentation Scores	pretest	2.53	2.75	-12.93	<.001
	posttest	5.22	2.95		
Physical/Bodily Movements	pretest	1.07	1.89	-1.00	.32
	posttest	1.27	2.25		
Manipulating Objects	pretest	.85	1.63	.78	.44
	posttest	.73	1.65		
Off-Task Audibles	pretest	.97	2.04	1.66	.10
	posttest	.67	1.96		
Engaged in Passive Listening	pretest	.72	1.18	.57	.57
	posttest	.65	1.13		

Table F

Paired t-test Results for Academic Skills and Inattention from Pretest to Posttest for the No Intervention Group

		m	sd	t(36)	p
Phonemic Segmentation Scores	pretest	2.43	2.62	-7.02	<.001
	posttest	5.16	3.01		
Physical/Bodily Movements	pretest	.70	2.01	-1.22	.23
	posttest	1.11	2.31		
Manipulating Objects	pretest	.86	1.89	.73	.47
	posttest	.62	2.30		
Off-Task Audibles	pretest	.92	2.31	.352	.73
	posttest	.78	2.75		
Engaged in Passive Listening	pretest	.95	1.37	.194	.85
	posttest	.89	1.43		

Table G

Paired t-test Results for Academic Skills and Inattention from Pretest to Posttest for the Intervention Only Group

		m	sd	t(37)	p
Phonemic Segmentation Scores	pretest	2.05	2.64	-7.58	<.001
	posttest	4.97	2.97		
Physical/Bodily Movements	pretest	1.26	1.91	-1.72	.09
	posttest	1.89	2.69		
Manipulating Objects	pretest	.74	1.54	1.11	.28
	posttest	.47	.86		
Off-Task Audibles	pretest	.71	1.47	-.11	.91
	posttest	.74	1.54		
Engaged in Passive Listening	pretest	.79	1.28	1.87	.07
	posttest	.47	.95		

Table H

Paired t-test Results for Academic Skills and Inattention from Pretest to Posttest for the Extended Intervention Group

		m	sd	t(34)	p
Phonemic Segmentation Scores	pretest	3.14	2.96	-8.10	<.001
	posttest	5.54	2.91		
Physical/Bodily Movements	pretest	1.26	1.70	1.55	.13
	posttest	.77	1.42		
Manipulating Objects	pretest	.97	1.47	-.52	.60
	posttest	1.11	1.45		
Off-Task Audibles	pretest	1.31	2.26	2.79	.01
	posttest	.49	1.31		
Engaged in Passive Listening	pretest	.40	.74	-.85	.40
	posttest	.57	.92		

Additionally, the study collected qualitative data to answer the qualitative sub-question: *What focus behaviors are noticed across each group during lesson implementation?* The researcher conducted debriefing phone interviews with all six educator participants after each academic lesson across the two-day lesson sequence. After each question, the researcher scribed summative notes based on the participants' responses. Characteristic of an Improvement Science framework, the researcher inserted additional clarifying questions as needed. The researcher then analyzed the responses for similarities and emerging themes. Interviewees responded to three questions following each lesson:

- *How engaged/focused do you think students were in the lesson today?*
- *What factors do you think affected student engagement/focus and/or learning access in the lesson today?*
- *What else did you notice regarding the student's engagement, presentation of the lesson, and/or students' acquisition of the skill being taught?*

The researcher then merged the twelve responses and coded them for patterns of likeness, which revealed four themes.

- Theme #1: Factors of Impact
- Theme #2: Self-Regulation Techniques Positively Impact Learning Access
- Theme #3: The Value of Observation
- Theme #4: The Case for SEL Coaching

Through their observations of student inattention while the researcher conducted lessons, participants noted several factors that affected a student's ability to attend to and access their learning. Having a new adult present (the researcher), the time of day (morning versus afternoon), whether students had just had recess or physical activity prior to the lesson, and not having support for high-need

students with interrupting behavioral issues had the most impact on inattention outcomes. Some of these factors were consistent across the two days, while others were not. Reflecting on the connection between addressing factors that impact self-regulation and learning access, one educator noted, “One day [the two high-behavioral need students] were both out and we accessed twice as much academic work because I didn’t need to refocus the rest of the class as much.”

Despite these factors, educators unanimously agreed that regularly using any SEL strategies, whether isolated or embedded, is an effective way to help students better attend to and access their learning more than not using them at all. These findings were based on educators reflecting on both prior study experiences with various SEL self-regulation strategies as well as the specific breathing techniques introduced with the study. One educator compared the first day’s learning access to the second day’s saying, “In Day 2, more students showed evidence of grasping the concept versus just looking for what color cube their friend was holding up. ”

Additionally, educators collectively valued the use of observation to gain a deeper understanding of their students’ behaviors as well as new ideas for lesson pedagogy and implementation. Educators commented on their “love of the chime” which was not part of the study, but which the researcher used to gently regain attention of all students between lesson tasks. Educators mutually “liked to be the observer” each echoing the remarks of one educator who exclaimed,

I noticed the same kids having inattention that I usually notice when teaching but was surprised by how much redirection they need once I saw the data in checkmarks. It just goes to show you the importance of having time and space to ‘see’ your kids.

Furthermore, educators overwhelmingly touted the value of being able to observe the researcher, a veteran kindergarten teacher, “showing how to do it. ” They reflected on the importance of using SEL

strategies to help self-regulate their students for better learning access but felt unsupported in the “how-to-do-it”. As noted in the background of this study, most educators recognize the need for SEL and have access to planned programs for isolated implementation. However, there are limited resources that show how to embed SEL within the academic curriculum for a more equitable learning approach. An educator from the Extended Intervention Group excitedly said, “I loved the way you said things to help redirect them” and “I needed to see how it was done (embedding SEL) and then it made sense to me.” The educators universally agreed that they needed more support, training, and coaching/modeling to gain the expertise and confidence to use SEL strategies regularly, both in isolation prior to lessons as well as embedded into lessons to achieve the greatest impact.

Approximately one week after the study concluded, the researcher sent a summary of the study findings, both quantitative and qualitative, to the six educator participants for member checking and reflecting. The researcher then conducted a final phone interview to gather feedback on these findings. Interviewees answered the following questions:

- *To what extent has the intervention or any methods modeled (chime, redirection phrases, etc.) carried over beyond the lesson implementation?*
- *How do the above outcomes relate to your observations during the lesson implementation? Do you agree? Disagree?*
- *What limitations and/or additional supports do you need in order to use this information to improve your students’ self-regulation and overall learning access? Please be specific with your needs.*
- *How has this project impacted your own educational practices?*

In addition to these pre-designed questions, the researcher wanted to reflect on the overwhelming theme of SEL coaching that emerged from the first set of interviews, thereby adding an additional question:

- *The “Case for Coaching” was the strongest theme present throughout all the debriefing interviews, thereby making a strong case for SEL coaching/modeling. What are your feelings regarding this finding? Final thoughts?*

A first round of coding grouped like responses into categories. A second round of coding synthesized these categories and highlighted key terms similar among the responses. Finally, after coding first and then refining the codes, three themes emerged.

- Theme #1: Impact on Educational Practices
- Theme #2: Educator Voice
- Theme #3: Power of Coaching

One week after the study concluded, an impact on educational practices carried on in all participating classrooms, including the no intervention groups. Educators had learned techniques through modeling and discussion irrelevant of the assigned groups. 100% of educator participants began using the chime to gently elicit attention in their students between learning tasks. Educators regularly include the breathing techniques as both preventative practice to ready their students’ bodies to access their learning and as a restorative practice when students started increasing inattentive actions. They felt these strategies “added to my pocket of tricks” for improving their students’ attention and learning readiness. Commenting on the effectiveness of such tools, one educator noted, “I do find that it does help [the students] and it takes them into another state when they get worked up.” The same educator explained to her students how knowing these strategies was like having “golden nuggets of knowledge,

which can be used any time... maybe even at home,” thereby extending coping knowledge outside of school as well.

In addition to this theme, the final interviews revealed a strong sense of educator agency, which illuminated their voice. They emphasized their understanding of the power of SEL interventions and the need for them to address a growing number of disruptive behavioral issues, which hinders equitable learning access with each passing school year. However, they feel “frustrated and under supported” in their training to improve the situation. They unanimously felt that they were “willing to learn if the district was willing to train... and be flexible and creative with addressing this age group’s unique needs versus the current ‘one size fits all’ mindset.” Commenting that “teachers are in tears” this year, one educator went on to express, “I feel like I am trying to do everything, and nothing is done well [the students], the conversation needs to continue, the way it’s going right now is not sustainable.” Another educator felt “hopeful to know that these findings will advocate for ourselves and our students” and lead to some change. Other educators echoed similar sentiments of gratitude, “Thank you for putting this on people’s radar; mental health is so important and just gets stepped on.” Speaking on behalf of the entire grade level, one educator’s final thoughts passionately indicated, “We are frustrated, and we are here to back you up. There needs to be a change. We are losing good teachers. How can we move forward helping everyone (teachers and students) receive these strategies?” Participating educators felt supported to speak their true thoughts as the researcher held a non-supervisory role. As a result, the researcher found the educator voices to be raw and real.

Furthermore, this educator agency also revealed an overwhelming theme regarding the power of coaching, especially SEL coaching. Participating educators valued not only the ability to be an observer of their students, but also the opportunity to “see it action” as the researcher modeled both academic pedagogy and SEL integration. All educators, including those of the no intervention group, commented

that they had “learned so much just from watching how you do it.” They discussed various components of a coaching model as areas that they need to support improved educational practices. Several educators mentioned how the presence of the researcher renewed their drive as a teacher. One participant commented, “Good timing coming in mid-year to help me re-assess and move forward. It gave me a pep in my step and reminded me of my why: ‘having a joyful and good experience while in kindergarten’.” Another educator noted the importance of having the modeling coach represent the grade she teaches saying, “It was nice to see how other teachers teach it in the grade I teach (a kindergarten teacher modeling it in kindergarten).” Alongside the need for a strong coaching model, the educators collectively felt that they needed more professional learning (PL) in self-regulation (SR) and SEL in general. One educator exclaimed, “We need PL specific on SEL and SR strategies, not academics. Invest in SEL curriculum but take away something else. And we need access to regular coaching and individualized support.” Another educator mirrored these sentiments wanting, “Time to learn and PL geared to SEL strategies instead of math. We need time throughout the day to embed SEL and quiet choice time, which uses the power of free play to improve SEL for this age group.” Educators felt that additional support and training would allow them to “be more comfortable implementing ourselves” and that this need is “essential in today’s world... [because] we don’t have enough training for changing needs.” One educator’s final thought summed up the mutual mindset of them all, “Put some [money] into SEL. It’s not just about becoming a good human, but to be stronger academically too. It’s an investment in their education, learning access, and is a Tier one preventative versus a Tier 2 restorative investment, which counts only on the [school] counselors.” This study revealed the high need for training and on-going coaching, which could impact the regular use of SEL strategies and may in turn improve more equitable well-being and learning access for all students.

Details of the Data Analysis

Data analysis occurred across multiple steps. To analyze the quantitative data, first, the researcher scored the academic pre and post-tests using a typical educational scoring system of ten points out of ten. Next, the researcher uploaded the scores into an Excel Microsoft spreadsheet, along with the students' demographics such as gender, subgroup, and behavior plan information. Following this step, the researcher tallied the inattention checkmarks from the four inattention categories across the two days of observations then added this data to the spreadsheet. Once the spreadsheet was complete, the researcher transferred the gathered data to an outside statistician who analyzed the data using the Statistical Package for the Social Sciences (SPSS), a descriptive statistical analysis software program. The statistician performed paired *t*-tests between pre and post measures with all three groups (intervention, extended intervention, and no intervention) as well as a paired samples *t*-test analysis to test for any changes with all groups combined. Upon completion of the statistical analysis, the researcher evaluated the results of the *t*-tests and drew conclusions based on the analysis. The researcher cited these conclusions in the "Data Collection" portion of this study. The researcher also used a summary of these conclusions to conduct a member check with all six educator participants, prior to the final qualitative interviews. One hundred percent of members agreed with the both the quantitative and qualitative findings.

To analyze the qualitative data, the researcher electronically transcribed the hand-written notes taken from the phone interviews, initially color-coded them for likeness patterns (inductive coding) using a Microsoft Word Processing software program, and then refined the codes further using line-by-line coding to determine emerging themes, also noted in the "Data Collection" portion of this study. The researcher applied the same steps to the final interviews, following the member checking. Additionally, the researcher shared the qualitative coded findings with an outside researcher well-versed in mixed

methods research to determine intercoder reliability. This researcher agreed with the themes based on the qualitative findings.

The researcher took several intentional actions to ensure increased fidelity and strategies for rigor in this study. To improve fidelity, the researcher conducted all the academic lessons across both school sites and all groups. Using a scripted lesson format (see Appendix I) allowed the researcher to conduct the lessons in the same way across all classes, except for the addition of the intervention as prescribed. Using literature-based breathing techniques allowed the researcher to conduct the intervention with fidelity, modeling the same techniques across both the intervention and extended intervention groups. To further improve fidelity, the researcher conducted the pre and post-tests according to the prescribed directions for implementation of the phonemic segmentation portion of the phonological segmentation assessment found in the assessment manual (CORE, 2018).

The researcher used various strategies for rigor as well. To improve the rigor of this study, the researcher applied strategies such as member checking, daily data audit reflections, and systematic analysis to evaluate both the quantitative and qualitative data. In addition to these strategies, the researcher utilized an outside statistician and mixed methods researcher to apply descriptive statistical analysis to the quantitative data collection and review the qualitative data thereby enhancing intercoder reliability. Both this intentional action and the choice to conduct research outside of the researcher's home school site to allow for reduced researcher bias may have improved this study's reliability and rigor.

Summary of the Results

A mixed method convergent research design seeks to blend the quantitative and qualitative data to gain a deeper understanding of the researched problem (Creswell & Plano-Clark, 2018). Additionally,

housed within an Improvement Science framework, this ISDiP study aims to use the findings to determine actionable next steps towards improving that problem (Bryk et al., 2017). The researcher used triangulation to merge both the quantitative and qualitative findings to gain a deeper understanding of the outcomes and determine suggested practices for continuous improvement. With all six classes showing a statistical significance in academic scores from pre to post-test, this study supports the value of implementing outside educator coaching and modeling of pedagogy as well as SEL integration, whether isolated, embedded, or even the regular use of SEL tools, such as the chime and redirecting phrases, which were not part of the study but had a profound impact on the educators' own instructional practices, as evidenced by their interview comments.

Furthermore, inattention data revealed no statistically significant changes in the no intervention group, approaching statistically significant changes in the intervention group, and a clear statistically significant change in one inattention category in the embedded intervention group, thereby supporting the hypothesis that embedded SEL may lead to greater impact. The educators' interviews further substantiated these findings when they noted that although multiple factors impacted inattention, the use of any SEL strategies afforded the students greater learning access than not using any at all.

Corroborated by the students themselves, one educator participant quoted a student as saying, "I like how I know how to handle myself now" when asked to reflect on the breathing techniques after the lesson and the educators reported an overwhelming positive response by the students after they received the video version of the breathing techniques following the conclusion of the study. The overarching aim of this ISDiP was to use an SEL strategy to improve learning access for all students no matter their starting academic level or socio-economic status. In just two days of lessons, educators saw a difference in how their students attended to and accessed their academic learning. One educator exclaimed, "I loved that they were looking at you most of the time and those who did lose focus got right back on

easily.” Using the information gathered from this study combined with increased training, coaching, and regular SEL and academic integration, has the potential to improve the problem of inequitable learning access for many students.

Chapter 5: Discussion

Improvement Science follows a cyclical process in which the researcher sets out to *plan, do, study, and act* (Bryk et al., 2017). This Improvement Science Dissertation in Practice (ISDiP) study followed this framework to address the problem of inequitable learning access due to inattentive, dysregulated students. The purpose of this chapter is to discuss the outcomes of this study and its implications for improving practice. Three overarching questions drive the Improvement Science process: *What specifically are we trying to accomplish? What change might we introduce and why?* and *How will we know that a change is actually an improvement?* (Bryk et al., 2017). The first two chapters of this ISDiP study aimed to answer the first driving question, the third chapter answered the second, and the fourth and fifth chapters addressed the final question. It is in this final chapter that the research meets the road, shifting from theoretical to practical application for improved educational practices.

Summary of the Results

This ISDiP study had some predicted and unpredicted results. Although the researcher hypothesized that the extended intervention group would show greater impact on their academic scores, due to the embedded self-regulation intervention, in fact, all three groups showed statistical significance in their academic scores from pre to post-test answering the research question: *How do the word segmentation scores compare across groups pre to posttest?* After diving deeper through educator interviews into what factors may have impacted these results, qualitative themes revealed that the instructional choices carried out by the researcher during lesson implementation further improved skill acquisition, which was an unintended outcome of the study for all groups. The data also revealed a gradual increase in significance in inattention data among the three groups answering the research question: *What are the effects for kindergarteners on inattention and acquisition of phonemic segmentation skills when self-regulation breathing techniques are embedded into the lesson structure*

versus conducted in isolation prior to lesson implementation or not conducted at all? The group receiving no intervention had no statistically significant inattention data, whereas the group receiving the isolated intervention prior to the academic lesson had two inattention categories approaching significance. While the extended intervention had one inattention category that had statistically significant data, thereby supporting the original hypothesis. The study collected data across two days, but the researcher anticipated that additional days of intervention may serve to improve inattention amongst students in both intervention groups. Of equal importance was the qualitative findings, which answered the research question: *What focus behaviors are noticed across each group during lesson implementation?* These findings revealed the unpredicted outcome reflecting the overwhelming need for further educator training and support when implementing any type of SEL intervention.

Discussion of the Results

Designed to improve practice using a flexible process cycle, this ISDiP study reflects how this research aimed to determine best instructional SEL integration practices only to find an even greater root cause of the problem. The Collaborative for Academic, Social, and Emotional Learning (CASEL) cites both explicit, isolated SEL instruction and embedded SEL instruction in academics as success indicators for full schoolwide SEL implementation (2021, May). However, without on-going training and follow-up coaching in how to explicitly instruct and embed SEL strategies on a regular basis, this impactful intervention loses its effectiveness. This study illuminated the power of SEL instructional modeling and coaching for greater impact. This was an unintended outcome of the research, but a clear direction towards improving the problem of practice. One goal of the Improvement Science framework is to illuminate the opaque, or the unexpected to understand the problem more deeply and respond more effectively. The statistical significance of the academic scores revealed that coaching across just two days translated into greater student academic outcomes and some improved inattention outcomes.

Furthermore, the final interviews reflected that all six educators intentional improved their educational practices because of observing the researcher's integration techniques. Across only two days of modeling, educators found actionable take-a-ways to improve practice. The researcher predicts that regular modeling and coaching could improve this trajectory for further educational practice impact in the long term.

Despite the unintended outcomes of the study, the researcher was not surprised by the findings. Mindfulness practices, such as the breathing techniques intervention, requires a conducive environment and on-going usage to be most effective (Loucks et al., 2021). When educators do not feel trained, confident, and supported, then the environment is not optimal for the integration of mindfulness practices. Furthermore, behavioral change strategies are typically hands-on in nature and not easily accessible by educators who simply read about them in "one and done" professional learning models. To improve effectiveness of educator training, experts should teach and model behavioral change strategies and allow educators to practice and reflect upon strategies in an on-going coaching cycle for greatest impact (Joyce & Showers, 2002). Addressing the root cause of minimal training in route to the problem of increased student inattention should in turn allow for greater learning access outcomes when applying the SEL interventions.

Limitations of the Results

There are four limitations of the results to consider. First, the researcher had to remove twelve initially consenting participants from the data, due to incomplete data collections (i.e., students were absent or moved). Second, the researcher brought to the study an expert background in the use of Mindfulness strategies and SEL pedagogy, which may have impacted the instructional model, as seen by the increase in academic scores across all three groups and the reflection of educators on "non-study" components such as the use of the mindfulness chime and more mindful redirection phrases. Third,

although the study followed the Improvement Science framework in part, due to logistical purposes, the researcher had to bring the study to completion prior to continuing the framework with revised interventions based on findings (Bryk et al., 2017), which may have impacted additional findings. Fourth, the effects of the 2019 Global COVID Pandemic may have impacted both the educators' mindsets and the student participants' behaviors, as well as the overall classroom environment and culture. At the time of this study, kindergartners were coming from a year in lockdown where there were minimal to no typical playdates and interactions, minimal to no attendance in preschool, and societal functioning was atypical with parents working virtually at home while trying to attend to young children, all of which may have negatively impacted attention abilities and learning access once arriving at a structure school environment. Consumers of research should consider these limitations when contemplating the study outcomes.

Recommendations for Practice and Further Study

The findings of this study suggest immediate implications for practice. Current research has shown the power of using mindfulness breathing, even just a few breaths throughout the day, to reduce physiological arousal and ready the brain for learning access (Obradovic et al., 2021). This self-regulation strategy is a low-cost way to improve inattention in students and is immediately applicable to any grade level and any subject area. This study suggests, however, that the key to effective implementation would be to use a coaching model to educate teachers on how to use the strategy, afford them the opportunity to see the strategy modeled and practice the strategy themselves, and follow up with on-going reflection about integrating this and other high-impact SEL strategies to improve students' overall well-being and learning access. Previous research supports this important suggestion noting the power of social networks among teachers as having the ability to shape positive belief systems and build collegial support, which in turn can benefit student behavior and academic outcomes

(Mowrey, 2020). If districts cannot afford outside experts, they may want to consider using their psychologists, social workers, or school counselors to lead pertinent professional learning regarding behavior change strategies as this is all part of their wheelhouse of expertise. Furthermore, these staff members are in non-supervisory positions, so coaching educators may be more effective.

Additionally, qualitative results revealed the strong impact of being able to observe one's own students for a deeper understanding of their behaviors. School systems may want to consider utilizing already-in-place support staff (i.e.: math or literacy specialists) to create observation schedules a few times throughout the school year to allow educators time to "see their students" more. These specialists are typically well-versed in the curriculum and could teach the academic lesson, while the classroom teacher observes student behaviors to gather pertinent information, which could be useful towards addressing those behaviors.

Another low-cost recommendation for school districts to consider is to use research like this study to guide schedule changes according to specific grade-level needs. Typically, academic student schedules follow a set program of work, where times are pre-determined across all grade levels. However, not all grade levels have the same needs. Educators in this study discussed the positive impact of having an extra morning play break for their students where they could socialize and release energy. This would be in addition to their already scheduled recess, which comes at the end of the day. Research supports the power of play noting that it can significantly improve a child's cognitive, social, and emotional functioning (Macpherson Parrott & Cohen, 2020). A simple schedule change, freeing a grade-level from the constraints of the other grade-level schedules, could have far-reaching impacts on young students' ability to attend better and access their learning more.

Future iterations of this research should consider applying the methodology longitudinally to align with best practices research for SEL strategy interventions. Additionally, the concept of analyzing

embedded versus isolated intervention effects could include a multitude of SEL interventions, beyond just mindfulness breathing techniques. A researcher could continue the research by applying the study design across various grade levels, subject areas, and utilize other established SEL strategies and competencies. For example, analyzing the effects of applying an embedded versus isolated self-management goal setting strategy into a math lesson to ready oneself for solving a problem. The purpose would always be the same... to find the best instructional practices for more equitable learning access.

Conclusion

Social-emotional learning has always existed, but the Global COVID-19 Pandemic has brought it to the forefront as an impactful way to improve the inequitable disparities among our children in schools, chiefly their access to learning. Furthermore, SEL strategies are useful to address both preventative and restorative behavioral practices, thereby helping our students heal from and handle a plethora of traumas they may face daily. While academic strategies are only as effective as the level of learning the child is at, SEL strategies are effective no matter a child's starting academic level or socio-economic status (Blair & Razza, 2007).

In the end, the results of this ISDiP study revealed that both embedding the self-regulation breathing intervention within the academic lesson or conducting it prior to the lesson may have a greater impact on learning access, then not using any intervention at all and the most effective way to accomplish this task is to train, model, and coach teachers in the best way to use SEL strategies effectively. Due to the pandemic, districts all over the world now know what SEL is. This study and further research in this area has the power to inform districts of a potential way to further SEL competence through an easy to implement low-cost intervention. Presenting the findings of this research to the district as well as looking closely at ways to implement the actionable suggested steps noted above in the next school year effectively would be a recommended next step. Reflective of the

Improvement Science framework, it is not enough to simply gather the information and deepen our understanding of this on-going problem of practice. It is equally important to use this information to inform practice and policy review and impactful change.

Addressing SEL alongside academics has the capacity to change the trajectory of students' lives and consequently society's future. It can place students in a better position to cope with the challenges of life, help them to think more critically and compassionately, it can build their social awareness and their ability to embrace the diversities of their world. SEL is the key to moving society from a deficit-based mindset to a strength-based mindset that can improve inequitable learning access for all (The Education Trust, 2020). School is no longer solely about learning academics. SEL places students and educators in the right mindset to access their academic learning best. It is truly *a balancing act*. We cannot have one without the other if we truly want to make a positive change in our world.

References

- Allen, N. P., Hume, L. E., Allan, D. M., Farrington, A. L., & Lonigan, C. J. (2014). Relations between inhibitory control and the development of academic skills in preschool and kindergarten: Meta-analysis. *Developmental Psychology*, 50(10), 2368-2379.
- Bahr, M., Gouwens, D. A., & Schuh, G. (2012). Evaluation of handheld computers for direct systematic classroom observation. *Computers in the Schools*, 29: 268-284.
- Bergen-cico, D., Razza, R., & Timmins, A. (2015). Fostering self-regulation through curriculum infusion of mindful yoga: A pilot study of efficacy and feasibility. *Journal of Child Family Studies*, 45, 3448-3461. <https://doi.org/10.1007/s10826-015-0146-2>
- Bettencourt, A. F., Gross, D., Ho, G., & Perrin, N. (2017). The costly consequences of not being socially and behaviorally ready to learn by kindergarten in Baltimore city. *J Urban Health*, 95, 36-50. <https://doi.org/10.1007/s11524-017-0214-6>
- Blair, C. & Raver, C. C. (2014). Closing the achievement gap through modification of neurocognitive and neuroendocrine function: Results from a cluster randomized controlled trial of an innovative approach to the education of children in kindergarten. *PLoS One*, 9(11), 1-13. <https://doi.org/10.1371/journal.pone.0112393>
- Blair, C. & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, 78(2), 647-663.
- Brahmbhatt, K., Hilty, D. M., Hah, M., Angkustsiri, & Schweitzer, J.B. (2016). Diagnosis and treatment of attention deficit hyperactivity disorder during adolescence in the primary care setting: A concise review. *Journal of Adolescent Health*, 59(2), 135-143. <https://doi.org/10.1016/j.jadohealth.2016.03.025>

- Breisch, A. M., & Daniels, B. (2013). Using self-management interventions to address general education behavioral needs: An assessment of effectiveness and feasibility. *Psychology in the Schools*, 50, 366-381.
- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2017). *Learning to improve: How america's schools can get better at getting better*. Harvard Education Press.
- Cabral, M. D. I, Liu, S., & Soares, N. (2020). Attention-deficit/hyperactivity disorder: Diagnostic criteria, epidemiology, risk factors and evaluation in youth. *Journal of Translational Pediatrics*, 9(1), 104-113. <https://doi.org/10.21037/tp.2019.09.08>
- Callahan, J. (2019). Connecticut's academic achievement gap: Research report. *Office of Legislative Research*. <https://www.cga.ct.gov/2019/rpt/pdf/2019-R-0172.pdf>
- Caughy, M. O., Mills, B., Brinkley, D., & Owen, M. T. (2018). Behavioral Self-regulation, early academic achievement, and the effectiveness of urban schools for low-income ethnic minority children. *Am J Community Psychology*, 61, 372-385. <https://doi.org/10.1002/ajcp.12242>
- Centers for Disease Control and Prevention (CDCP). (2021, May 31). *Attention-Deficit / Hyperactivity Disorder (ADHD): Data and statistics about ADHD*. <https://www.cdc.gov/ncbddd/adhd/data.html>
- Chang, I. (2020). Influences of executive function, language comprehension, and fluency on young children's reading comprehension. *Journal of Early Childhood Research*, 18(1), 44-57. <https://doi.org/10.1177/1476718X19875768>
- Coldren, J. T. (2013). Cognitive control predicts academic achievement in kindergarten children. *Journal Compilation*, 7(1), 40-48.
- Collaborative for Academic, Social, and Emotional Learning (CASEL). (2021, May). *CASEL guide to schoolwide SEL: Indicators of success*. <https://casel.org/>

Connecticut State Department of Education (CSDE). (2020). *Profile and performance reports*.

<http://edsight.ct.gov/SASPortal/main.do>

Connecticut Voices for Children (CVC). (2006, June). *District reference groups: Formerly educational reference groups*. Hartford, CT. <https://ctvoices.org/wp-content/uploads/2011/08/ece06drgerg.pdf>

Consortium on Reaching Excellence in Education (CORE). (2021). About CORE.

<https://www.corelearn.com/who-we-are/#history>

Coping Skills for Kids. (2021). *Deep breathing exercises for kids*. Encourage Play, LLC.

<https://copingskillsforkids.com/deep-breathing-exercises-for-kids>

CORE Literacy Library. (2018). *Assessing reading: Multiple measures – For all educators working to improve reading achievement*. Consortium on Reaching Excellence in Education, Inc.

Creswell, J. W. & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research*. CA: SAGE Publications, Inc.

Cruz, V. M., Otaiba, S., Hsiao, Y., Clemens, N. H., Jones, F. G., Rivas, B. K., Brewer, E. A., Hagan-Burke, S., & Simmons, L.E. (2019). The prevalence and stability of challenging behaviors and concurrent early literacy growth among kindergartners at reading risk. *The Elementary School Journal*, 120(2), 220-242.

Dehaene, S. (2009). *Reading and the brain: The new science of how we read*. Penguin Books.

Daunic, A., Corbett, N., Smith, S., Barnes, T., Santiago-Poventud, L., Chalfant, P., Pitts, D., & Gleaton, J. (2013). Brief report: Integrating social-emotional learning with literacy instruction: An intervention for children at risk for emotional and behavioral disorders. *Behavioral Disorders*, 39(1), 43-51.

- Diamond, A., & Lee, K. (2011). Interventions show to aid executive functioning development in children 4 to 12 years old. *Science*, 333(6045), 959-964. <https://doi.org/10.1126/science.1204529>
- DuPaul, G. J., Volpe, R. J., Jitendra, A., Lutz, J. G., Lorah, K., & Gruber, R. (2004). Elementary school students with ADHD: predictors of academic achievement. *Journal of School Psychology*, 42, 285-301.
- Durlak, J. A., Domitrovich, C. E., Weissberg, R. P., & Gullotta, T. P. (2015). *Handbook of social and emotional learning: Research and practice*. The Guilford Press.
- Finders, J. K., McClelland, M. M., Geldhof, G. J., & Rothwell, D. W. (2020). Explaining achievement gaps in kindergarten and third grade: The role of self-regulation and executive function skills. *Early Childhood Research Quarterly*, 54, 72-85.
<https://doi.org/10.1016/j.ecresq.2020.07.008>
- Frodl, T. & Skokauskas, N. (2012). Meta-analysis of structural MRI studies in child and adults with attention deficit hyperactivity disorder indicates treatment effects. *Acta Pyschiatrica Sacandinavica*, 125, 114-126. <https://doi.org/10.1111/j.1600-0447.2011.01786x>
- Garwood, J. D., Varghese, C., & Vernon-Feagans, L. (2017). Internalizing behaviors and hyperactivity/inattention: Consequences for young struggling readers, and especially boys. *Journal of Early Intervention*, 39(3), 218-235.
- Gibbs, V. D. (2017). *Self-regulation and mindfulness*. PESI Publishing & Media.
- Greater Good Science Center. (2010, April 14). *Jon Kabat-Zinn: What is mindfulness?*
<https://www.youtube.com/watch?v=xoLQ3qkh0w0>
- Hart, B. & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Paul H. Brookes Publishing Co.
- Hart, H., Radua, J., Nakao, T., Mataix-Cols, D., & Rubia, K. (2013). Meta-analysis of functional

magnetic imaging studies of inhibition and attention-deficit/hyperactivity disorder. *JAMA Psychiatry*, 70, 185-198. <https://doi.org/10.1001/jamapsychiatry.2013.277>

Heckman, J. (2021, May). Perry Preschool Research. <https://heckmanequation.org/>

Hinnant-Crawford, B. N. (2020). *Improvement science in education: A primer*. Myers Education Press.

Hosterman, S. J., DuPaul, G. J., & Jitendra, A. (2008). Teacher ratings of ADHD symptoms in ethnic minority students: Bias or behavior differences? *School Psychology Quarterly*, 23, 418-435.

Institute of Education Sciences (IES). (2020). National household education surveys program. *National Center for Education Statistics*.

file:///G:/National%20Household%20Education%20Surveys%20Program%20Data.pdf

Jennings, T. (2016, November 4). Using attention signals in the classroom. Education.com.

<https://teacher-blog.education.com/using-attention-signals-in-the-classroom-1cb638930d3e>

Junod, R. E. V., DuPaul, G. J., Jitendra, A. K., Volpe, R. J., & Cleary, K.S. (2006). Classroom observations of students with and without ADHD: Differences across types of engagement. *Journal of School Psychology*, 44, 87-104.

Jones, S. M., Aber, J. L., & Brown, J. L. (2011). Two-Year impacts of a universal school-based social-emotional and literacy intervention: An experiment in translational developmental research. *Child Development*, 82(2), 533-554. <https://doi.org/10.1111/j.1467-8624.2010.01560.x>

Joyce, B. & Showers, B. (2003). *Designing training and peer coaching: Our needs for learning*. ASCD.

Kabat-Zinn, J. (1994). *Wherever you go there you are: Mindfulness meditation in everyday life*. Hachette Books.

- Kim, W. & Linan-Thompson, S. (2013). The effects of self-regulation on science vocabulary acquisition of English language learners with learning difficulties. *Remedial and Special Education, 34*(4), 225-236. <https://doi.org/10.1177/0741932513476956>
- Kindergarten Entrance Inventory (KEI). (2020). *Kindergarten entrance inventory handbook*. <https://portal.ct.gov/-/media/SDE/Student-Assessment/K-Assessment/KEI-handbook.pdf?la=en>
- Kindergarten Entrance Inventory (KEI). (2014-2017). *Kindergarten entrance inventory results*. <http://data.ctdata.org/dataset/kindergarten-entrance-inventory-results>
- Kraemer, E. E., Davies, S. C., Arndt, K. J., & Hunley, S. (2012). A comparison of the mystery motivator and the “Get ‘Em On Task” interventions for off-task behaviors. *Psychology in the Schools, 49*, 163-175.
- Lewis, B. (2019, October 10). *Behavior incentives in the classroom*. ThoughtCo. <https://www.thoughtco.com/classroom-rewards-for-good-behavior-2080992>
- Loucks, E. B., Crane, R. S., Sanghvi, M. A., Montero-Marin, J., Prouix, J., Brewer, J. A., & Kuyken, W. (2021). Mindfulness-based programs: Why, when, and how to adapt? *Global Advances in Health and Medicine, 11*, 1-12. <https://doi.org/10.1177/21646561211068805>
- Macpherson Parrott, H. & Cohen, L. E. (2020). Advocating for play: The benefit of unstructured play in public schools. *School Community Journal, 30*(2), 229-254. <http://www.schoolcommunitynetwork.org/SCJ.aspx>
- Massachusetts Advocates for Children (MAC) in collaboration with Harvard Law School. (2005). *Helping traumatized children learn: A report and policy agenda*. <https://www.traumasensitiveschools.org>
- McClelland, M. M., Connor, C. M., Jewkes, A. M., Cameron, C. E., Farris, C. L., & Morrison, F. J.

- (2007). Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. *Developmental Psychology*, 43(4), 947-959. <https://doi.org/10.1037/0012-1649.43.4.947>
- McIntosh, K., Sugai, G., & Simonsen, B. (2020, February). *Ditch the clip! Why clip charts are not a PBIS practice and what to do instead*. Positive Behavior Interventions and Support: OSEP Technical Assistance Center.
- McKelvey, L. M., Connors Edge, N., Mesman, G. R., Whiteside-Mansell, L., & Bradley, R. H. (2018). Adverse experiences in infancy and toddlerhood: Relations to adaptive behavior and academic status in middle childhood. *Child Abuse and Neglect*, 82, 168-177. <https://doi.org/10.1016/j.chiabu.2018.05.026>
- McTighe, J. & Willis, J. (2019). *Upgrade your teaching: Understanding by design meets neuroscience*. ASCD.
- Mowrey, S. C. (2020). Early childhood professional culture: Social networks and beliefs among pre-kindergarten educators. *Journal of Early Childhood Research*, 18(3), 306-320. <https://doi.org/10.1177/1476718X20911980>
- Obradovic, J., Sulik, M. J., & Armstrong-Carter, E. (2021). Taking a few deep breaths significantly reduces children's physiological arousal in everyday settings: Results of a preregistered video intervention. *Developmental Psychobiology*, 63(8), <https://doi.org/10.1002/dev.22214>
- Ogg, J., Rogers, M., & Volpe, R. (2016). Understanding the relationship between inattention and early literacy trajectories in kindergarten. *School of Psychology Quarterly*, 31(4), 565-582.
- Pearson. (2013). *Behavior observation of students in school (BOSS) user guide*. NCS, Pearson, Inc.
- Perry, J. A, Zambo, D., & Crow, R. (2020). *The improvement science dissertation in practice*.

Myers Education Press.

- Pfifner, L. J., Villodas, M., Kaiser, N., Tooney, M., & McBurnett, K. (2013). Educational outcomes of collaborative school-home behavioral intervention for ADHD. *School Psychology Quarterly*, 28, 25-36.
- Puranik, C. S., Boss, E., & Wanless, S. (2018). Relations between self-regulation and early writing: Domain specific or task dependent? *Early Childhood Research Quarterly*, 46(2019), 228-239. <https://doi.org/10.1016/j.ecresq.2018.02.006>
- Riley, J. L., McKevitt, B. C., Shriver, M. D., & Allen, J. (2011). Increasing on-task behavior using teacher attention delivered on a fixed time schedule. *Journal of Behavioral Education*, 20, 149-162.
- Romero, V. E., Robertson, R., & Warner, A. (2018). *Building resilience in students impacted by adverse childhood experiences*. Sage Publications, Ltd.
- Saez, L., Folsom, J. S., Otaiba, S., & Schatschneider, C. (2012). Relations among student attention behaviors, teacher practices, and beginning word reading skill. *Journal of Learning Disabilities*, 45(5), 418-432. <https://doi.org/10.1177/0022219411431243>
- Shanahan, T. (2005). *The national reading panel report: Practical advice for teachers*. Learning Point Associates.
- Shelton Public School System. (2020). *Vision, mission, and core belief statements*. http://www.sheltonpublicschools.org/vision_mission_and_core_beliefs_statements
- Shelton Public School System. (2020). *Shelton's vision of a graduate*. http://www.sheltonpublicschools.org/groups/67290/strategic_planning/kindergarten
- Sims, D. M. & Lonigan, C.J. (2013). Inattention, hyperactivity, and emergent literacy: Different

facets of inattention relate uniquely to preschoolers' reading-related skills. *Journal of Clinical Child & Adolescent Psychology*, 42(2), 208-219. <https://doi.org/10.1080/15374416.2012.738453>

Steiner, N. J., Sidhu, T., Rene, K., Tomasetti, K., Frenette, E., & Brennan, R. T. (2013).

Development and testing of a direct observation code training protocol for elementary aged students with attention deficit/hyperactivity disorder. *Educational Assessment, Evaluation and Accountability*, <https://doi.org/10.1007/s11092-013-9166-x>

Tamana, S. K, Ezeugwu, V., Chikuma, J., Lefebvre, D. L., Azad, M.B., Moraes, T. J., Subbarao, P., Becker, A. B., Turvey, S. E., Sears, M. R., Dick, B. D., Carson, V., Rasmussen, C., CHILD Study Investigators, Pei, J., & Mandhane, P. J. (2019). Screen-time is associated with inattention problems in preschoolers: Results from the Child birth cohort study. *PLOS One*, 14(4), <https://doi.org/10.1371/journal.pone.0213995>

Tereda, Y. (2018, March 9). *Research-tested benefits of breaks*. Edutopia. George Lucas Educational Foundation. <https://www.edutopia.org/article/research-tested-benefits-breaks>

The Aspen Institute: National Commission on Social, Emotional, & Academic Development (NCSEAD). (2021, May 31). *From a nation at risk to a nation at hope: recommendations from the national commission on social, emotional, & academic development*. <http://nationathope.org/>

The Education Trust. (2020, August). *Social, emotional, and academic development through an equity lens*. <https://www.EDTrust.org>

The Nation's Report Card (NRC). (2021, May 31). *National assessment on educational progress (NAEP) report card: 2019 NAEP reading assessment*. <https://www.nationsreportcard.gov/highlights/reading/2019/>

Thomas, E. M., & Centeio, E. E. (2020). The benefits of yoga in the classroom: A mixed-methods

approach to the effects of poses and breathing and relaxation techniques. *International Journal of Yoga*, 13, 250-254. https://doi.org/10.4103/ijoy.IJOY_76_19

Van de Sande, E., Segers, E., & Verhoeven, L. (2018). The role of executive functions for dyadic literacy learning in kindergarten. *Early Education and Development*, 29(2), 192-206. <https://doi.org/10.1080/10409289.2017.1393739>

Vekety, B., Logemann, H. N., & Takacs, Z. K. (2021). The effects of mindfulness-based interventions on inattentive and hyperactive-impulsive behavior in childhood: A meta-analysis. *International Journal of Behavior Development*, 45(2), 133-145. <https://doi.org/10.1177/0165025420958192>

Wexler, N. (2019). *The knowledge gap: The hidden cause of America's broken education system – and how to fix it*. Penguin Random House LLC.

Your Dictionary. (2021). *Types of research questions with examples*. Love to Know Media. <https://examples.yourdictionary.com/types-of-research-questions-with-examples.html>

Xu, G., Strathearn, L., Liu, B., Yang, B., & Bao, W. (2018). Twenty-year trends in diagnosed attention-deficit/hyperactivity disorder among US children and adolescents, 1997-2016. *JAMA*, 1(4): e181471. <https://doi.org/10.1001/jamanetworkopen.2018.1471>

Appendix A*Online Empathy Interview Survey Questions*

1. What is your current role in the school and how long have you been in this role?
2. How has kindergarten students' attention and focus changed over the past 5 years?
3. What causes do you think have contributed to these changes?
4. How have kindergarten student outcomes in the subject area of literacy changed over the past 5 years?
5. What causes do you think have contributed to these changes?
6. To what extent have you been trained to address inattention in Tier 1 kindergarten students?
7. Describe SEL strategies tried to aid students with inattention to access their learning better. Include if these strategies were isolated prior to academic lessons or embedded directly into the lesson.
8. In what ways do you think inattention impacts kindergartners readiness to access their learning?
9. How have the changes in the areas of attention and literacy affected your role?
10. What else do you want me to know about the areas of literacy and inattention?

Appendix B

Environmental Informant Consultant Interview Questions

1. Official Job Title:
2. To what extent do kindergarten students have equitable learning access to their academics?
 - a. Are there any specific student groups that seem to have more or less barriers to their learning access? (Name groups.)
 - b. What types of barriers are most evident?
3. How has the inattention of kindergartners changed over the past five years, beyond typical kindergarten behaviors?
 - a. To what extent are classroom teachers trained with strategies to handle inattention in kindergarten students?
 - b. To what extent are classroom teachers trained with the neuroscience behind inattention (i.e.: causes and physiology)?
4. To what extent do kindergarten teachers use SEL practices to aid students in self-regulation and learning access?
 - a. To what extent are classroom teachers trained to use SEL programs in isolation (i.e.: explicit lessons and during breaks and transition times)?
 - b. To what extent are classroom teachers trained to use SEL programs embedded into academics (i.e.: using breathing techniques in a literacy lesson, etc.)?

Appendix C*Collaborative Institutional Training Initiative Certificate*

		Completion Date 14-Sep-2019 Expiration Date 13-Sep-2022 Record ID 32863679
This is to certify that:		
Kimberly Atkinson		
Has completed the following CITI Program course:		
Social & Behavioral Research - Basic/Refresher (Curriculum Group) Social & Behavioral Research - Basic/Refresher (Course Learner Group) 1 - Basic Course (Stage)		
Under requirements set by:		
Sacred Heart University, Inc.		
 Collaborative Institutional Training Initiative		
Verify at www.citiprogram.org/verify/?wc90454e0-c227-4434-80da-c95967ade1b7-32863679		

Appendix D

Permission to Conduct Research in Shelton Public Schools District



Kenneth Saranich
Superintendent of Schools

SHELTON BOARD OF EDUCATION

382 Long Hill Avenue, Shelton, CT 06484
Tel. (203) 924-1023 Fax (203) 924-5894
www.sheltonpublicschools.org

Permission to Conduct Research

June 21, 2021

To Whom It May Concern:

This signed letter serves as consent from the Shelton Public School System (SPSS) for Kimberly Atkinson to conduct research in the school system between the months of June 2021 and August 2022, in accordance with the receipt of the Institutional Review Board approval for the purpose of completing an Improvement Science Dissertation in Practice (ISDiP) study as part of the researcher's Doctorate in Educational Leadership with a Focus on Social-Emotional Learning (SEL) through Sacred Heart University.

The research, which will be conducted across two elementary school sites, Elizabeth Shelton School (ESS) and Long Hill School (LHS), consists of two phases. The first phase will be conducted in June 2021. This phase will conduct a qualitative data collection through an anonymous online empathy interview survey. The purpose of this data collection will be to gather information regarding inattention and focus of kindergarten students. The voluntary survey will be sent to kindergarten teachers, school administrators, school counselors, school psychologists, and school social workers of both school sites (ESS and LHS). The outcome of this data collection will serve to defend part of the problem of practice for the larger ISDiP study.

Phase two of the larger ISDiP study will be conducted between January and August of 2022. This phase will conduct a form of action research that seeks to determine the effects of embedded versus isolated self-regulation techniques on literacy outcomes. The study will require a sampling of three kindergarten classrooms (intervention group- SEL intervention prior to literacy lesson, enhanced intervention group- SEL intervention embedded into literacy lesson, and comparison group- traditional literacy lesson with no SEL intervention applied) as well as the use of the three teachers of those classrooms. Quantitative data will be collected through pre and post literacy assessments as well as qualitative data that will be collected through interviews with the teachers. The researcher will conduct all interventions to allow for treatment fidelity. Participation in the study by students and staff will be strictly voluntary and informed consent, including the use of deidentified information of the participants will ensure participant rights and protections are accounted for.

Allowing the researcher to conduct this research in the SPSS will afford the SPSS community the opportunity to view the researcher's defense of the project. Furthermore, the researcher commits to making the study process transparent to the district as well as disseminating the results and intervention methods used in the study, which will be available for the district to use as it sees fit. The overarching goal of the study is to seek best SEL and academic integration instructional practices that could be applied to all grade levels and all subject areas, to allow for more equitable learning access for all students.

By signing this document, the SPSS consents to allowing Kimberly Atkinson to conduct the research according to the outline above.

Print: Kenan Saranich

Date: 7/1/2021

Signature: 

Date: 7/1/2021

Superintendent of Shelton Public Schools - Ken Saranich

Appendix E

OPT-OUT Student Participation Informed Consent Letter

December 3, 2021

Dear Shelton Kindergarten Families,

My name is Kimberly Atkinson, and I am a kindergarten teacher at Booth Hill School in Shelton. I am conducting research for my Doctorate in Educational Leadership with a Focus on Social-Emotional and Academic Learning through Sacred Heart University in Fairfield, CT. My dissertation project aims to analyze the effects of breathing techniques on phonemic segmentation lessons (letter sound identification) to promote self-regulation in kindergartners for better learning access and retention of skills.

To conduct my research, I will be using the current Shelton literacy materials: Wilson Foundations Grade K to conduct the phonemic segmentation lessons as well as various breathing strategies from the text “2,4,6,8 This is How we Regulate” (2019) from licensed counselor and play therapist expert, Tracy Turner-Bumberry alongside the children’s book, “Alphabreaths: The ABC’s of Mindful Breathing” (Willard, Rechtschaffen, & BClifton-Brown, 2019). The project will take place across one week in the month of January 2022, as well as a follow-up day in February 2022. A pre, post, and follow-up assessment (consisting of no more than 10 questions) will be used to assess your child’s phonemic segmentation skills (CORE, 2018, Part C of the Phonological Segmentation Test) as well as the use of an anecdotal focus/inattention observational checklist (BOSS, 2013, adapted from the Academic Engagement-Non engagement portion).

The research findings will be part of my dissertation and will become a published document, however, all participating students will be assigned a unique identifier code, NO STUDENT NAMES NOR IDENTIFIERS WILL BE USED, and all data will be reported in the aggregate (averages, percentages, etc.).

Although this is a no-risk research project, you have the right to OPT-OUT your child from participating with no penalty to you or your child. If you wish for your child to OPT-OUT of participating in this research project, please notify your child’s teacher by email by **December 17, 2021.**

This dissertation research project is supported by the Superintendent of Shelton Schools and approved by the Institutional Review Board of Sacred Heart (INSERT IRB # HERE). Furthermore, I have been trained through the Collaborative Institutional Training Initiative (CITI- Certificate #32863679) to conduct ethical research. I appreciate your anticipated support of this project. If you have any further questions, please don’t hesitate to reach out.

Sincerely,

Kimberly Atkinson



katkinson@sheltonpublicschools.org

Appendix F

Teacher Participation Informed Consent Form: Face-to-Face Interview and Research Participants

November 5, 2021

Dear Shelton Kindergarten Teacher:

My name is Kimberly Atkinson, and I am a kindergarten teacher at Booth Hill School in Shelton. I am conducting research for my Doctorate in Educational Leadership with a Focus on Social-Emotional and Academic Learning through Sacred Heart University in Fairfield, CT. My dissertation project aims to analyze the effects of breathing techniques on phonemic segmentation lessons (letter sound identification) to promote self-regulation in kindergartners for better learning access and retention of skills.

To conduct my research, I will be conducting lessons using the current Shelton literacy materials: Wilson Foundations Grade K to conduct the phonemic segmentation lessons as well as various breathing strategies from the text “2,4,6,8 This is How we Regulate” (2019) from licensed counselor and play therapist expert, Tracy Turner-Bumberry alongside the children’s book, “Alphabreaths: The ABC’s of Mindful Breathing” (Willard, Rechtschaffen, & BClifton-Brown, 2019). The project will take place across one week in the month of January 2022, as well as a follow-up day in February 2022. A pre, post, and follow-up assessment (consisting of no more than 10 questions) will be used to assess your child’s phonemic segmentation skills (CORE, 2018, Part C of the Phonological Segmentation Test) as well as the use of an anecdotal focus/inattention observational checklist (BOSS, 2013, adapted from the Academic Engagement-Non engagement portion). The research findings will be part of my dissertation and will become a published document, however, all participants will be assigned a unique identifier code, NO NAMES NOR IDENTIFIERS WILL BE USED, and all data will be reported in the aggregate (averages, percentages, etc.).

You are being invited to participate in this research project. As a participant, I will need to use your classroom, materials, and students (once permissions are received) to conduct lessons and am asking that you conduct behavioral observations during the lessons and participate in short debriefing interviews following the lessons and again after the follow-up assessment. Although this is a no-risk research project, you have the right to decline participation. Please note, as your peer in the Shelton School System, your confidential decision to decline will not be reported to the district, will not impact your employment, nor negatively impact your collegial relationship with me. Please sign and return this consent form by **November 19, 2021** with your intentions.

This dissertation research project is supported by the Superintendent of Shelton Schools and approved by the Institutional Review Board of Sacred Heart (INSERT IRB # HERE). Furthermore, I have been trained through the Collaborative Institutional Training Initiative (CITI- Certificate #32863679) to conduct ethical research. I appreciate your anticipated support of this project. If you have any further questions, please don’t hesitate to reach out.

Sincerely,

Kimberly Atkinson



katkinson@sheltonpublicschools.org

Date: _____

Circle One:

I agree to participate in this research project as explained and recognize that I have the right to withdraw at any time without penalty.


I do not wish to participate in this research project.

Printed Name: _____

Signature: _____

Appendix G

Pre- and Post-Assessment: Phonological Segmentation Test – Part C: Phonemic Segmentation Test



TESTING PROTOCOL Proceed with testing when the student clearly understands the task. Discontinue testing if the student does not respond correctly to any of the first five Test Items in Part B.

PART C

Phoneme Segmentation

PHONEME SEGMENTATION

Given a whole word, student separates the word into individual phonemes and says each sound.

Begin this part by administering the following Practice Items.

Practice Item 1

On a table or desk, arrange eight different colored blocks in a row.

Say to the student: *We are going to use the blocks to show the sounds in a word. Let's say I wanted to show you the word time. The word time has three sounds /t/ /i/ /m/. Select and move one block for each of the sounds in time as you say the sounds slowly in order, /t/ /i/ /m/. Use a different colored block for each sound.*

Ask: *Can you say the three sounds in time? (/t/ /i/ /m/)* If the student says letter names instead of sounds, say: *Yes, that is how the word time is spelled, but I want you to tell me its sounds.*

If the student cannot independently say the sounds, repeat the sounds and ask: *Can you point to the block that stands for /t/? And which block stands for /m/? And what sound does the middle block stand for? (/i/)* Then ask the student: *Can you say the three sounds in time? (/t/ /i/ /m/)*

Practice Item 2


After rearranging all the blocks in a row, say to the student: *Now you try one. If you wanted to show the word shop, how many sounds is that? (three) Use the blocks to show me.*

If the student cannot segment the three sounds independently, model the task as follows.

Say: *The word shop has three sounds. Select and move a block for each of the sounds, as you say each sound in left-to-right progression, /sh/ /o/ /p/. Ask: What are the three sounds in shop? (/sh/ /o/ /p/) Which block stands for /sh/? (the first block) Which block stands for /p/? (the last block) What sound does the middle block stand for? (/o/)* If the student shows four blocks, he or she is probably trying to spell the word. Remind the student to pay attention to the sounds in the word, not the letters.

ASSESSING READING CORE PHONOLOGICAL SEGMENTATION TEST

21

 **TESTING PROTOCOL** Proceed with testing when the student clearly understands the task and can at least point to the block that represents the correct sound. Discontinue testing if the student does not respond correctly to any of the first five Test Items in Part C.

WHAT IT MEANS Use the following guidelines to determine the student's performance level. Scores shown are expected end-of-year scores for each grade.

CORE Phonological Segmentation Test

 **RECORD KEEPING**
Enter the student's score on a copy of the appropriate Student Profile Form and Class Record Form found in the Appendix.

See also...

CORE's Teaching Reading Sourcebook
Chapter 5: Phonological Awareness
LESSON MODELS
Phonological Medley: Starfish, p. 135
Sailed Ties, p. 137
Rhyme Sound Boxes, p. 156

Level of Performance	Test Items Correct	
Part A: Sentence Segmentation	K (Spring)	Grade 1 (Spring)
Benchmark	5	5
Strategic	4	
Intensive	0-3	0-4
Part B: Syllable Segmentation		
Benchmark	7-8	8
Strategic	5-6	7
Intensive	0-4	0-6
Part C: Phoneme Segmentation		
Benchmark	5-10	9-10
Strategic	3-4	6-8
Intensive	0-2	0-5

WHAT'S NEXT? Students who score at strategic or intensive levels will benefit from targeted or intensive instruction and extensive practice in the phonological awareness skills indicated.

CORE Phonological Segmentation Test — Teacher Record Form

Name _____ Grade _____ Date _____

Part C: Phoneme Segmentation

Practice items: Use blocks to show the sounds in the words ... time (/t/ /i/ /m/); shop (/sh/ /o/ /p/)

14. keep	(/k/ /e/ /p/)	(+) (-)	_____
15. bag	(/b/ /a/ /g/)	(+) (-)	_____
16. thumb	(/th/ /u/ /m/)	(+) (-)	_____
17. night	(/n/ /i/ /t/)	(+) (-)	_____
18. rock	(/r/ /o/ /k/)	(+) (-)	_____
19. itch	(/i/ /tch/)	(+) (-)	_____
20. head	(/h/ /e/ /d/)	(+) (-)	_____
21. short	(/sh/ /o/ /t/)	(+) (-)	_____
22. steak	(/s/ /t/ /e/ /k/)	(+) (-)	_____
23. clown	(/k/ /l/ /ow/ /n/)	(+) (-)	_____

Test Items Correct _____ /10

CORE Literacy Library. (2018). *Assessing reading: Multiple measures for all educators working to improve reading achievement*. Consortium on Reaching Excellence in Education, INC.

Appendix H

Focus/Inattention Observational Checklist – Academic Engagement – Nonengagement Portion

<i>Student Participant</i>	Engaging in out-of-seat behavior, physically touching another, and/or bodily fidgeting	Manipulating objects not related to task (twirling pencil, folding paper, etc.)	Making off-task audible sounds (humming, talking, call outs, etc.)	Passively listening, but not engaged (staring out window, looking around, etc.)
Student A				
Student B				
Student C				
Student D				
Student E				
Student F				
Student G				
Student H				
Student I				
Student J				
Student K				
Student L				
Student M				
Student N				
Student O				
Student P				
Student Q				
Student R				
Student S				
Student T				

Adapted from Pearson. (2013). *Behavioral observation of students in schools (BOSS)*. Pearson, Inc.

Appendix I

Scripted Academic Lesson Format

Atkinson – Research Week Lesson Plans Outline

Monday

One-on-one Pre-Assessment

Tools Needed:

- *8 different colored blocks
- *Class lists
- *Assessment forms with names pre-written and writing tool
- *Sticker pad

- Introduce myself to the class and tell them that I would like to see what they know about letter sounds, so I will be asking them to show me in the back of the room. *If you try your best, then I will reward you with a sticker.*

Line up 8 different colored blocks in a row.

“We are going to use blocks to show the sounds in a word.”

“I want to show you the word TIME. The word TIME has 3 sounds.” (push 3 blocks as you say the sounds)

“Can you say the 3 sounds in the word TIME? Can you point to the block that stands for the T-sound? Which block stands for the M-sound? What sound does the middle block stand for?”

Reset the blocks.

“Now you try. If you want to show me the sounds in the word SHOP, how many sounds is that? Use the blocks to show me.”

“Which block stands for SH-sound? Which block stands for P-sound? What sound does the middle block stand for?”

Reset the blocks.

“Now let’s try a few more. Move the blocks to show me how many sounds are in each of the words that I say.” (encourage them, but do not note if any are correct or not)

Log the outcomes of the ten words on the assessment. Reset the blocks between each word.

- *Thank you so much for showing me what you know about letter sounds in words. I can tell that you tried your best. Would you like to pick a sticker?* Send child back to seat.

Tuesday

Comparison Group – No Intervention

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets

Warm Up: Review letter sounds using flashcards.
Modeling: Make the connection between sandwiches and words (parts to whole). Explain how a good reader needs to be able to hear the sounds in a word in order for him or her to spell the word or read the word. <i>We need to know the parts of the word before we can know the whole word.</i> Explain that the learning target for today is to listen for and identify the sounds in words.
Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words: ship, bus, check, lap, dog . Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet after each word. Switch colors after each word.
Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound: mat, leg, fun, pig, hot . Ask students to tell you the color block that stands for the beginning sound, end sound, and middle sound after each word. Show the words on magnet board as well. Switch colors after each word.
Closure: Ask students to tell you in their own way how letters and words are like a sandwich. Discuss why it is important to listen for letter sounds in words (to help you spell and sound out to read). <i>Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.</i>

Note: Because this control group is not receiving any intervention, the lesson may be done sooner than expected. Ask students to practice their letter formations on their dry erase boards if time needs to be filled.

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Tuesday

Intervention Group – Isolated Breathing Sequence Prior to Lesson

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets
- *Text: “Alphabreaths” (Willard et.al., 2019) – Letters A-H

Intervention: *Before we get started, I would like to help you get your bodies calm and ready to learn. I am going to use breathing techniques to help you. I have a book that I will use each day I am here. We are going to learn different ways to breath to calm our bodies and get them ready to learn. Some you might like and some you might not like, and that’s okay, but I expect you to try each before deciding. Let’s begin.* Show the book and carry out letters A-H.

Warm Up: Review letter sounds using flashcards.

Modeling: Make the connection between sandwiches and words (parts to whole). Explain how a good reader needs to be able to hear the sounds in a word in order for him or her to spell the word or read the word. *We need to know the parts of the word before we can know the whole word.* Explain that the learning target for today is to listen for and identify the sounds in words.

Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words: **ship, bus, check, lap, dog**. Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet after each word. Switch colors after each word.

Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound: **mat, leg, fun, pig, hot**. Ask students to tell you the color block that stands for the beginning sound, end sound, and middle sound after each word. Show the words on magnet board as well. Switch colors after each word.

Closure: Ask students to tell you in their own way how letters and words are like a sandwich. Discuss why it is important to listen for letter sounds in words (to help you spell and sound out to read). *Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.*

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Tuesday

Extended Intervention Group – Embedded Breathing Sequence During Lesson

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets
- *Text: “Alphabreaths” (Willard et.al., 2019) – Letters A-H

Pre-Talk: Sometimes when we are learning, our bodies get wiggly inside and we have a hard time listening. Has that ever happened to you? When that happens to me, I like to do some breathing techniques to help me calm down and get back to my learning again. I would like to show you what I mean. I have a book (show book) that I will use each day I am here. While we are learning, we are also going to learn different ways to breath to calm our bodies and keep them learning. Some you might like and some you might not like, and that’s okay, but I expect you to try each before deciding. Let’s begin.

Warm Up: Review letter sounds using flashcards.

Modeling: Make the connection between sandwiches and words (parts to whole). Explain how a good reader needs to be able to hear the sounds in a word in order for him or her to spell the word or read the word. *We need to know the parts of the word before we can know the whole word.* Explain that the learning target for today is to listen for and identify the sounds in words.

Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words. **A-lap, B-bus, C-check, D-dog.** Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet. After each word, read the corresponding letter from the book and carry out the breath. Switch colors after each word.

Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound. **E-leg, F-fun, G-pig, H-hot.** Ask students to tell you the color block that stands for the beginning sound magnet, the end sound magnet, and the middle sound magnet. After each word, read the corresponding letter from the book and carry out the breath. Show the correct words on magnet board as well. Switch colors after each word.

Closure: Ask students to tell you in their own way how letters and words are like a sandwich. Discuss why it is important to listen for letter sounds in words (to help you spell and sound out to read). *Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.*

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Wednesday

Comparison Group – No Intervention

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets

Warm Up: Review letter sounds using flashcards.
Modeling: Review the connection between sandwiches and words (parts to whole). Ask students to explain why a good reader and writer needs to be able to hear the sounds in words (to sound out to read and to spell when writing). <i>We need to know the parts of the word before we can know the whole word. This strategy will also help us when we need to decode or sound out even harder words.</i> Explain that the learning target for today is to continue to listen for and identify the sounds in words.
Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words: sip, jug, sock, lad, sat . Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet after each word. Switch colors after each word.
Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound: men, net, cop, pin, hut . Ask students to tell you the color block that stands for the beginning sound, end sound, and middle sound after each word. Show the words on magnet board as well. Switch colors after each word.
Closure: Ask students to review why it is important to listen for letter sounds in words (to help you spell and sound out to read). <i>Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.</i>

Note: Because this control group is not receiving any intervention, the lesson may be done sooner than expected. Ask students to practice their letter formations on their dry erase boards if time needs to be filled.

- *While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.
- *Debriefing educator interview will follow this lesson before moving on to the next lesson.

Wednesday

Intervention Group – Isolated Breathing Sequence Prior to Lesson

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets
- *Text: “Alphabreaths” (Willard et.al., 2019) – Letters I-P

Intervention: *Before we get started, I would like to help you get your bodies calm and ready to learn again. I am going to use our book of breathing techniques to help us. Remember, some you might like and some you might not like, and that’s okay, but I expect you to try each before deciding. Let’s begin.* Show the book and carry out letters I-P.

Warm Up: Review letter sounds using flashcards.

Modeling: Review the connection between sandwiches and words (parts to whole). Ask students to explain why a good reader and writer needs to be able to hear the sounds in words (to sound out to read and to spell when writing). *We need to know the parts of the word before we can know the whole word. This strategy will also help us when we need to decode or sound out even harder words.*

Explain that the learning target for today is to continue to listen for and identify the sounds in words.

Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words: **sip, jug, sock, lad, sat**. Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet after each word. Switch colors after each word.

Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound: **men, net, cop, pin, hut**. Ask students to tell you the color block that stands for the beginning sound, end sound, and middle sound after each word. Show the words on magnet board as well. Switch colors after each word.

Closure: Ask students to review why it is important to listen for letter sounds in words (to help you spell and sound out to read). *Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.*

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Wednesday

Extended Intervention Group – Embedded Breathing Sequence During Lesson

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets
- *Text: “Alphabreaths” (Willard et.al., 2019) – Letters I-P

Pre-Talk: *Today we are going to continue to listen for and identify our letter sounds in words and throughout our learning we are also going to learn some more breathing techniques to help keep our bodies calm and ready to learn. Remember, some you might like and some you might not like, and that's okay, but I expect you to try each before deciding. Let's begin.*

Warm Up: Review letter sounds using flashcards.

Modeling: Review the connection between sandwiches and words (parts to whole). Ask students to explain why a good reader and writer needs to be able to hear the sounds in words (to sound out to read and to spell when writing). *We need to know the parts of the word before we can know the whole word. This strategy will also help us when we need to decode or sound out even harder words.*
 Explain that the learning target for today is to continue to listen for and identify the sounds in words.

Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words. **I-sip, J-jug, K-sock, L-lad.** Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet. After each word, read the corresponding letter from the book and carry out the breath. Switch colors after each word.

Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound. **M-men, N-net, O-cop, P-pin.** Ask students to tell you the color block that stands for the beginning sound magnet, the end sound magnet, and the middle sound magnet. After each word, read the corresponding letter from the book and carry out the breath. Show the correct words on magnet board as well. Switch colors after each word.

Closure: Ask students to review why it is important to listen for letter sounds in words (to help you spell and sound out to read). *Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.*

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Thursday

Comparison Group – No Intervention

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets

Warm Up: Review letter sounds using flashcards.
Modeling: <i>Today we are going to do one more practice listening for the sounds that make up words. Then tomorrow I am going to see how you are doing with this skill. Remember that good readers and writers need to know the parts of the word before they can know the whole word and getting better at this skill will also help us when we need to decode or sound out even harder words. The learning target for today is to continue to listen for and identify the sounds in words.</i>
Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words: quick, rat, set, tip, mug . Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet after each word. Switch colors after each word.
Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound: van, wet, box, yum, zip . Ask students to tell you the color block that stands for the beginning sound, end sound, and middle sound after each word. Show the words on magnet board as well. Switch colors after each word.
Closure: Ask students to review why it is important to listen for letter sounds in words (to help you spell and sound out to read). <i>Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill. Tomorrow I will ask you to show me what you have learned about this skill before your teachers continue to practice this some more.</i>

Note: Because this control group is not receiving any intervention, the lesson may be done sooner than expected. Ask students to practice their letter formations on their dry erase boards if time needs to be filled.

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Thursday

Intervention Group – Isolated Breathing Sequence Prior to Lesson

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets
- *Text: “Alphabreaths” (Willard et.al., 2019) – Letters Q-Z

Intervention: *Before we get started, I would like to help you get your bodies calm and ready to learn again. I am going to use our book of breathing techniques to help us. Remember, some you might like and some you might not like, and that’s okay, but I expect you to try each before deciding. Let’s begin. Show the book and carry out letters Q-Z.*

Warm Up: Review letter sounds using flashcards.

Modeling: *Today we are going to do one more practice listening for the sounds that make up words. Then tomorrow I am going to see how you are doing with this skill. Remember that good readers and writers need to know the parts of the word before they can know the whole word and getting better at this skill will also help us when we need to decode or sound out even harder words. The learning target for today is to continue to listen for and identify the sounds in words.*

Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words: **quick, rat, set, tip, mug**. Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet after each word. Switch colors after each word.

Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound: **van, wet, box, yum, zip**. Ask students to tell you the color block that stands for the beginning sound, end sound, and middle sound after each word. Show the words on magnet board as well. Switch colors after each word.

Closure: Ask students to review why it is important to listen for letter sounds in words (to help you spell and sound out to read). *Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill. Tomorrow I will ask you to show me what you have learned about this skill before your teachers continue to practice this some more.*

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Thursday

Extended Intervention Group – Embedded Breathing Sequence During Lesson

Tools Needed:

- *5 different colored blocks in individual student baggies (blue, red, green, yellow, black)
- *ABC flashcards
- *Dry erase triangle magnet board, dry erase tools and eraser, 5 different colored magnets
- *Text: “Alphabreaths” (Willard et.al., 2019) – Letters Q-Z

Pre-Talk: Today we are going to continue to listen for and identify our letter sounds in words and throughout our learning we are also going to learn some more breathing techniques to help keep our bodies calm and ready to learn. Remember, some you might like and some you might not like, and that’s okay, but I expect you to try each before deciding. Let’s begin.

Warm Up: Review letter sounds using flashcards.

Modeling: Today we are doing more practice listening for the sounds that make up words and then tomorrow I am going to see how you are doing with this skill. Remember that good readers and writers need to know the parts of the word before they can know the whole word and getting better at this skill will also help us when we need to decode or sound out even harder words. The learning target for today is to continue to listen for and identify the sounds in words.

Guided Practice: Say a few digraph and CVC words and move the magnets to show the sounds in the words. **Q-quick, R-rat, S-set, T-tip, U-mug.** Point out the beginning sound magnet, the end sound magnet, and the middle sound magnet. After each word, read the corresponding letter from the book and carry out the breath. Switch colors after each word.

Semi-Independent Practice: Have students set up their bag of blocks in a row (have every kid do the same color pattern- blue, red, green, yellow, black). Say a word and have them push the blocks up for each sound. **V-van, W-wet, X-box, Y-yum, Z-zip.** Ask students to tell you the color block that stands for the beginning sound magnet, the end sound magnet, and the middle sound magnet. After each word, read the corresponding letter from the book and carry out the breath. Show the correct words on magnet board as well. Switch colors after each word.

Closure: Ask students to tell you in their own way how letters and words are like a sandwich. Discuss why it is important to listen for letter sounds in words (to help you spell and sound out to read). *Our learning target for today was to listen for and identify the sounds in words and I saw that when you used your blocks today. I like the way you tried your best on this skill.*

*While the researcher conducts the lesson, the classroom teacher takes BOSS checklist notes.

*Debriefing educator interview will follow this lesson before moving on to the next lesson.

Friday

One-on-one Post-Assessment

Tools Needed:

- *8 different colored blocks
- *Class lists
- *Assessment forms with names pre-written and writing tool
- *Sticker pad

- Tell students how we have learned so much about letter sounds in words and how we want to see how much they have learned. Tell them that they can show me how much they've learned when I call them to the back of the room. *If you try your best, then I will reward you with a sticker.*

Line up 8 different colored blocks in a row.

"We are going to use blocks to show the sounds in a word."

"I want to show you the word BAKE. The word BAKE has 3 sounds." (push 3 blocks as you say the sounds)

"Can you say the 3 sounds in the word BAKE? Can you point to the block that stands for the B-sound? Which block stands for the K-sound? What sound does the middle block stand for?"

Reset the blocks.

"Now you try. If you want to show me the sounds in the word CHOP, how many sounds is that? Use the blocks to show me."

"Which block stands for CH-sound? Which block stands for P-sound? What sound does the middle block stand for?"

Reset the blocks.

"Now let's try a few more. Move the blocks to show me how many sounds are in each of the words that I say." (encourage them, but do not note if any are correct or not)

Log the outcomes of the ten words on the assessment. Reset the blocks between each word.

- *Thank you so much for showing me what you know about letter sounds in words. I can tell that you tried your best. Would you like to pick a sticker?* Send child back to seat.

*Final educator interviews will follow this assessment one week later.